2018 Classroom Report

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education.github.com

Summary

1. Using GitHub (versus not using GitHub) in programming classes predicted greater positive learning outcomes.

   - Students felt more prepared for being a part of the developer community and creating a portfolio of their work.

   - Students felt more prepared for future internships and career, and learned more about collaboration, popular industry tools, and project management.

2. Using GitHub (versus not using GitHub) in programming classes predicted a greater sense of belonging, a variable important to academic success.

   - Students felt a greater sense of belonging both in the classroom and in the field.

Summary (continued)

2. Students who received (versus did not receive) feedback via GitHub benefited more from teacher feedback.

    - Students felt they used their teachers' feedback more effectively and found their teachers' feedback more helpful.

    - Students felt their teachers were more aware of their needs as a student.

    - Students felt they used their peers' feedback more effectively and found their peers' feedback more helpful.

3. Students needed more support from teachers and peers when learning to use GitHub.

    - About a quarter of students felt they received less support than they needed from teachers, and about a third of students felt they received less support than they needed from peers.

Method

Survey design overview

Participants

- Both users and non-users of GitHub participated
- We emailed students with currently active student coupons
- We emailed teachers who applied for the teacher discount either for personal repositories or for free organization

Survey eligibility

- Must have taken or taught a class with a programming component this past semester

Two versions of the survey

- Student version
- Teacher version

Respondents overview

	Student Survey	Teacher Survey
Number of respondents	7530 (37.2% used GitHub in classroom)	300 (67.0% used GitHub in classroom)
Response rate	1.6%	1.7%
Completion rate	82.1%	85.0%

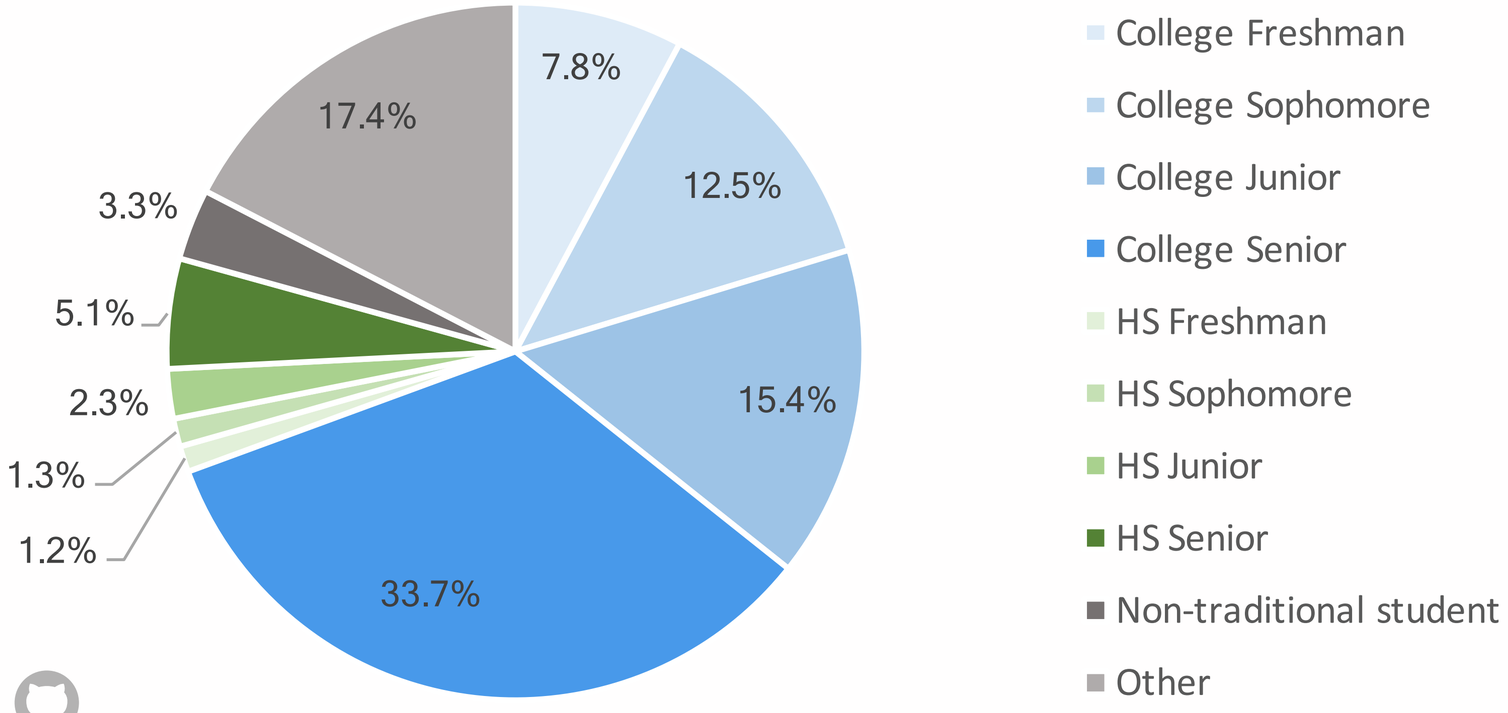
Excluding respondents who quit before naming a course to think about for the survey

Respondent characteristics:

Year in school

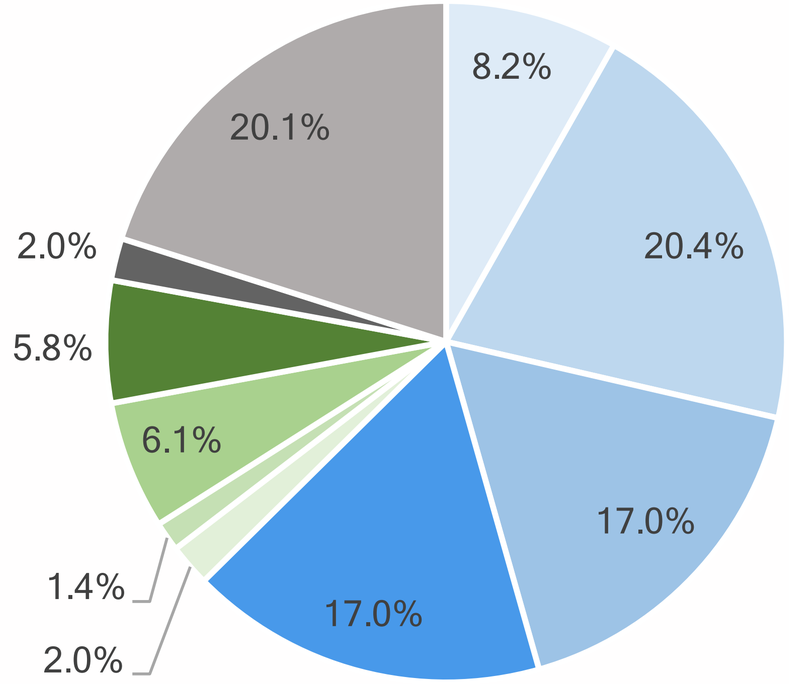
Student Survey

Year in school



Teacher Survey

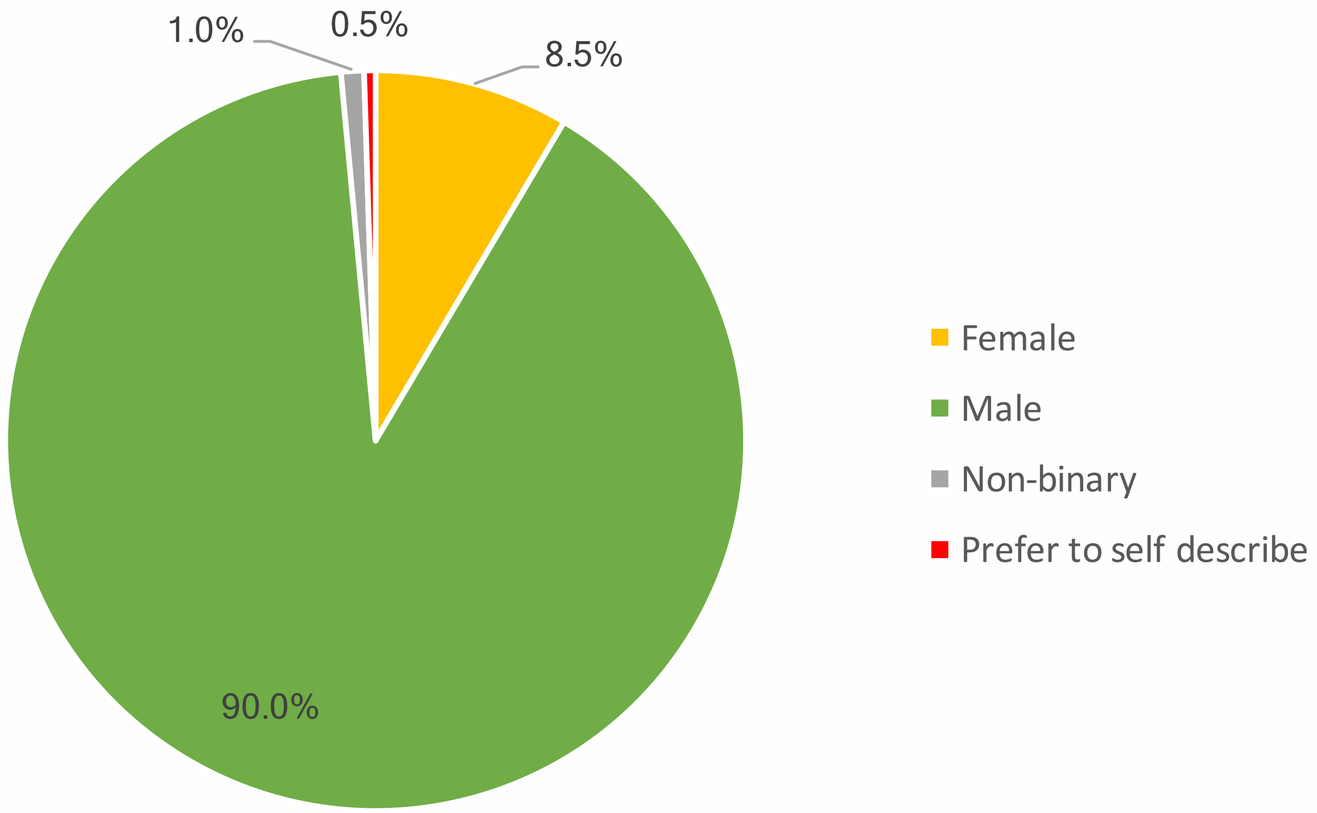
What year in school was the average student in your course?



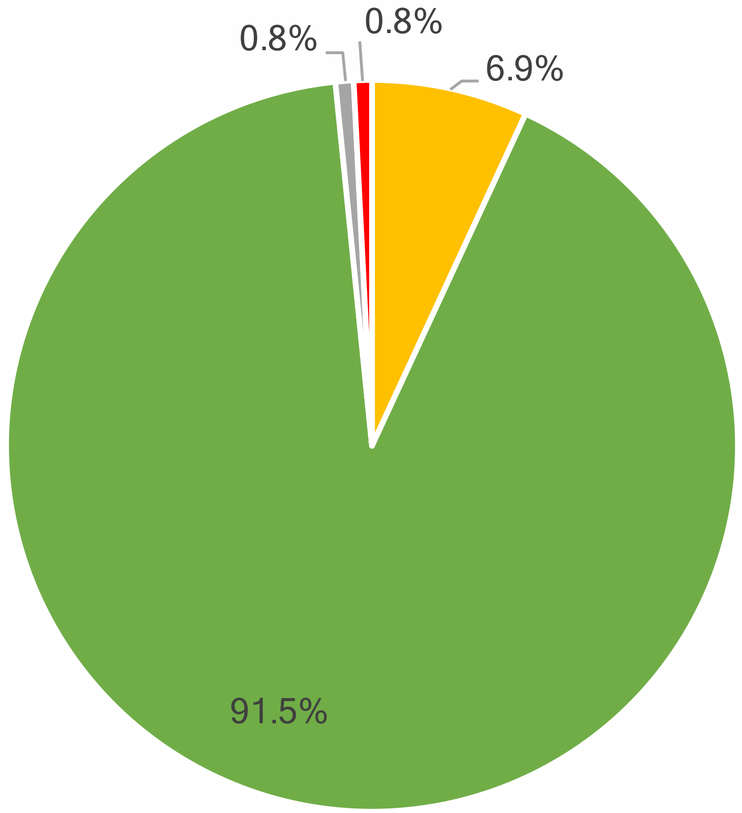
Respondent characteristics:

Gender

Student Survey



Teacher Survey

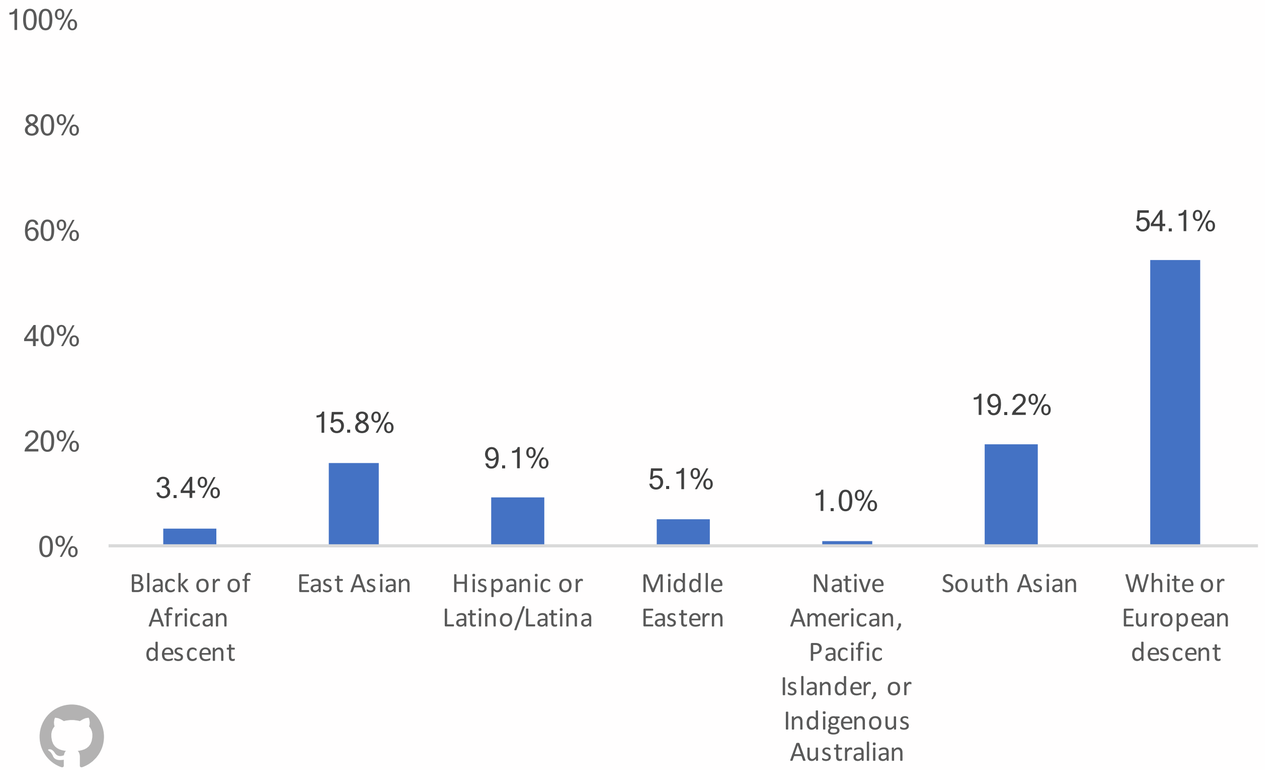


Respondent characteristics:

Race and ethnicity

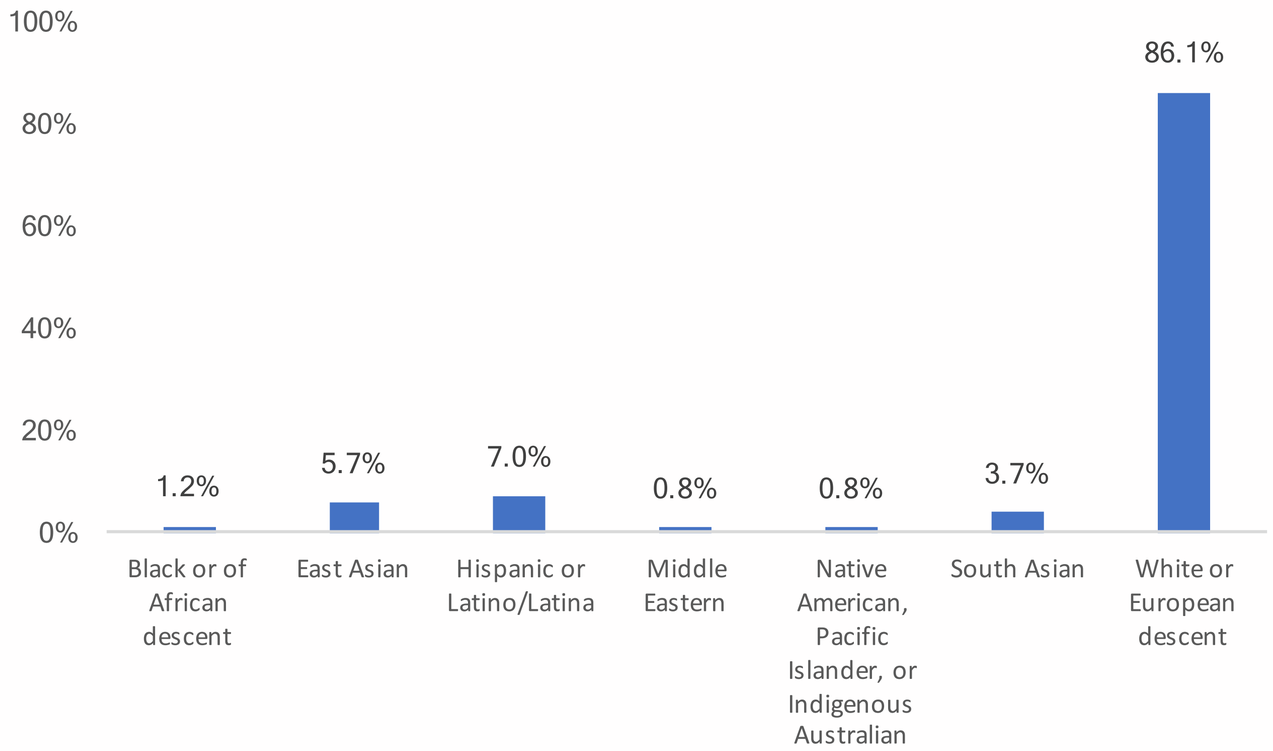
Student Survey

Select all that apply



Teacher Survey

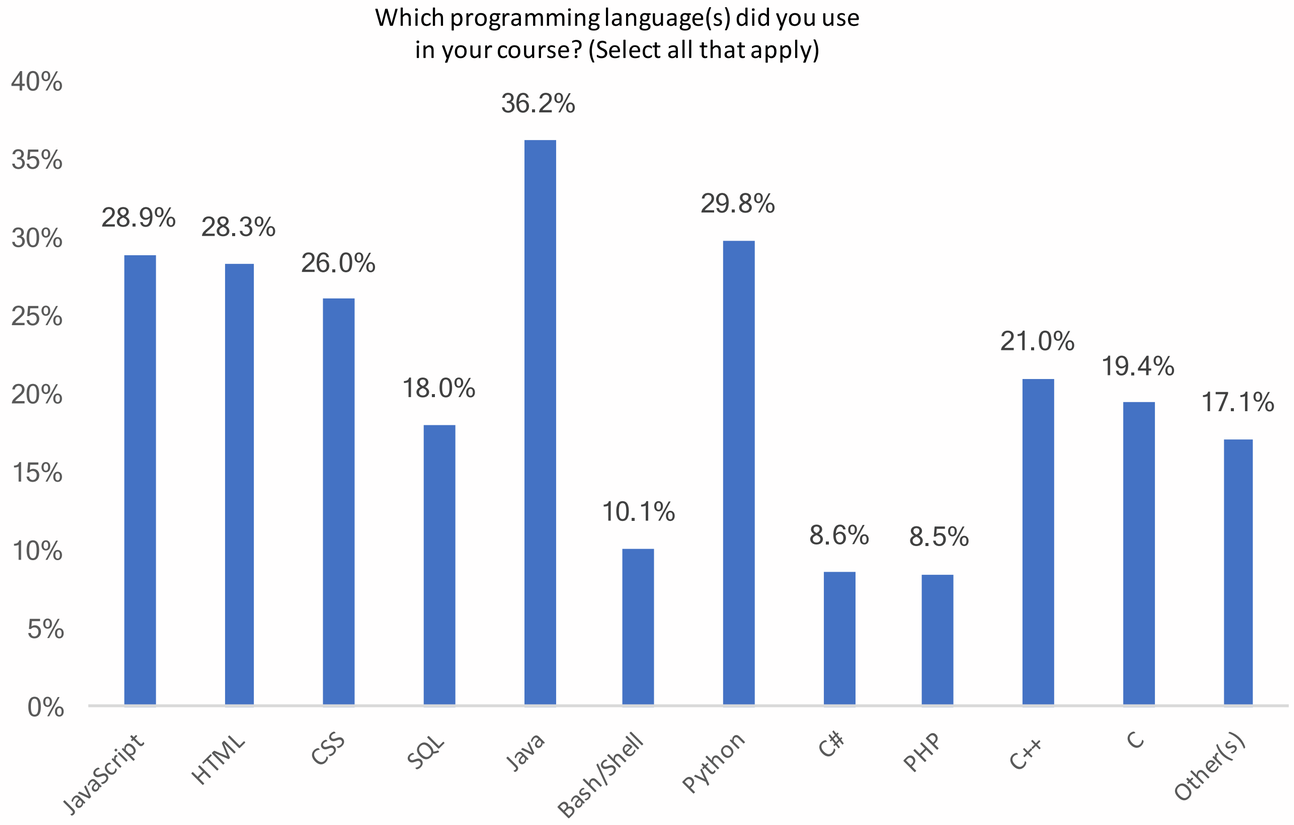
Select all that apply



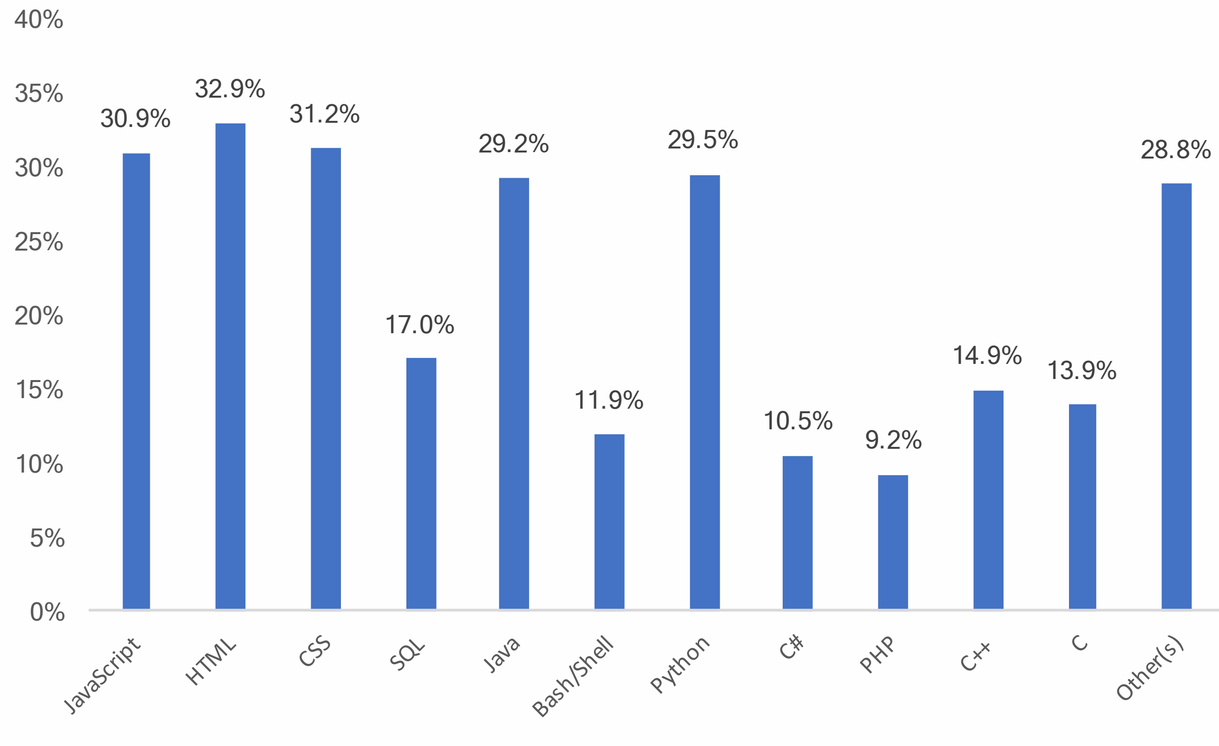
Respondent characteristics:

Programming languages

Student Survey



Teacher Survey



Learning Outcomes: Preparation for the future

Preparation for the future:

Key takeaways

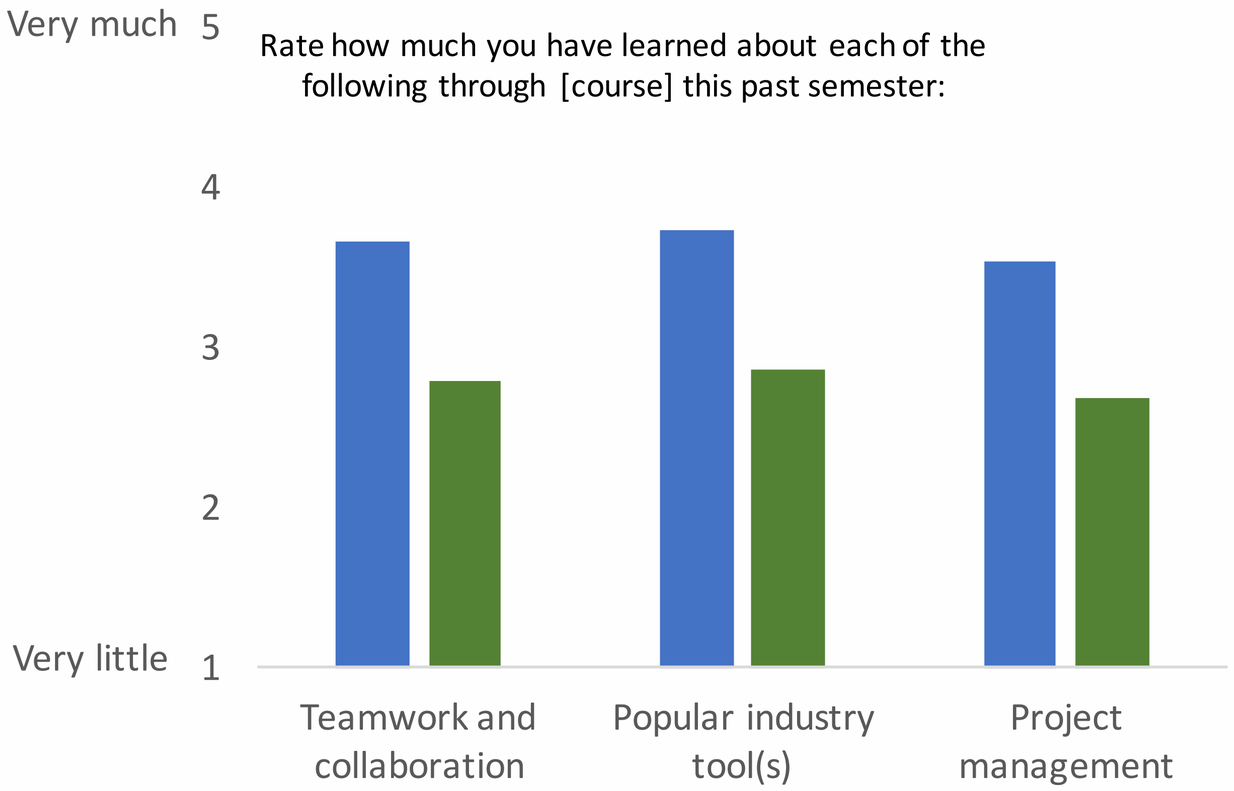
Using GitHub (versus not using GitHub) in programming classes predicted greater positive learning outcomes.

- Preparation for the future
  - Students felt more prepared for being a part of the developer community and creating a portfolio of their work.
  - Students felt more prepared for future internships and career, and learned more about collaboration, popular industry tools, and project management.
- The number of GitHub features used in the classroom positively predicted learning outcomes for students.

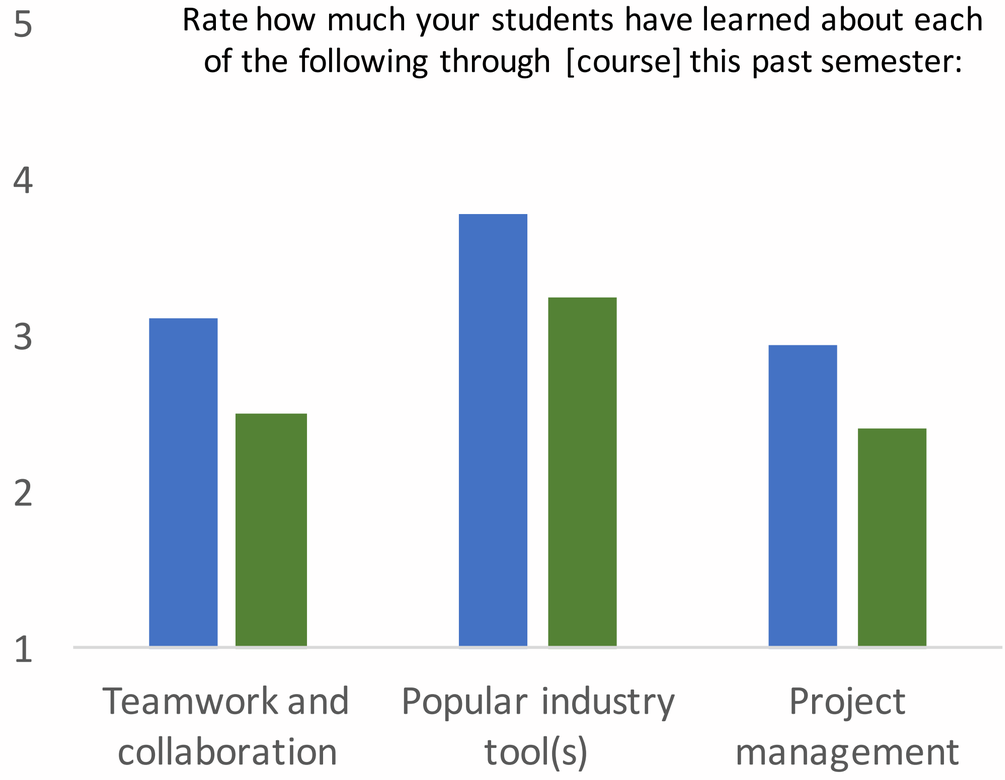
Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey



Teacher Survey

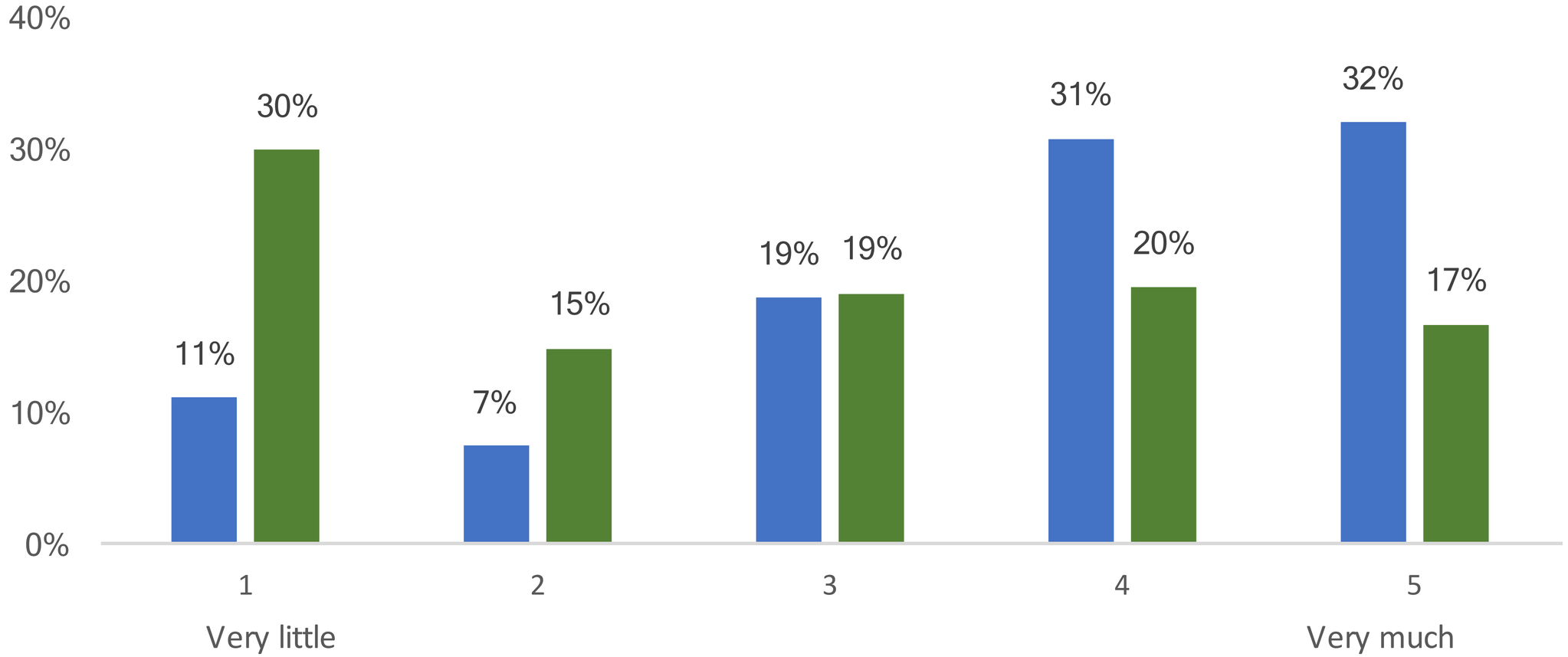


Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey

Rate how much you have learned about each of the following through [course] this past semester: **Teamwork and collaboration**

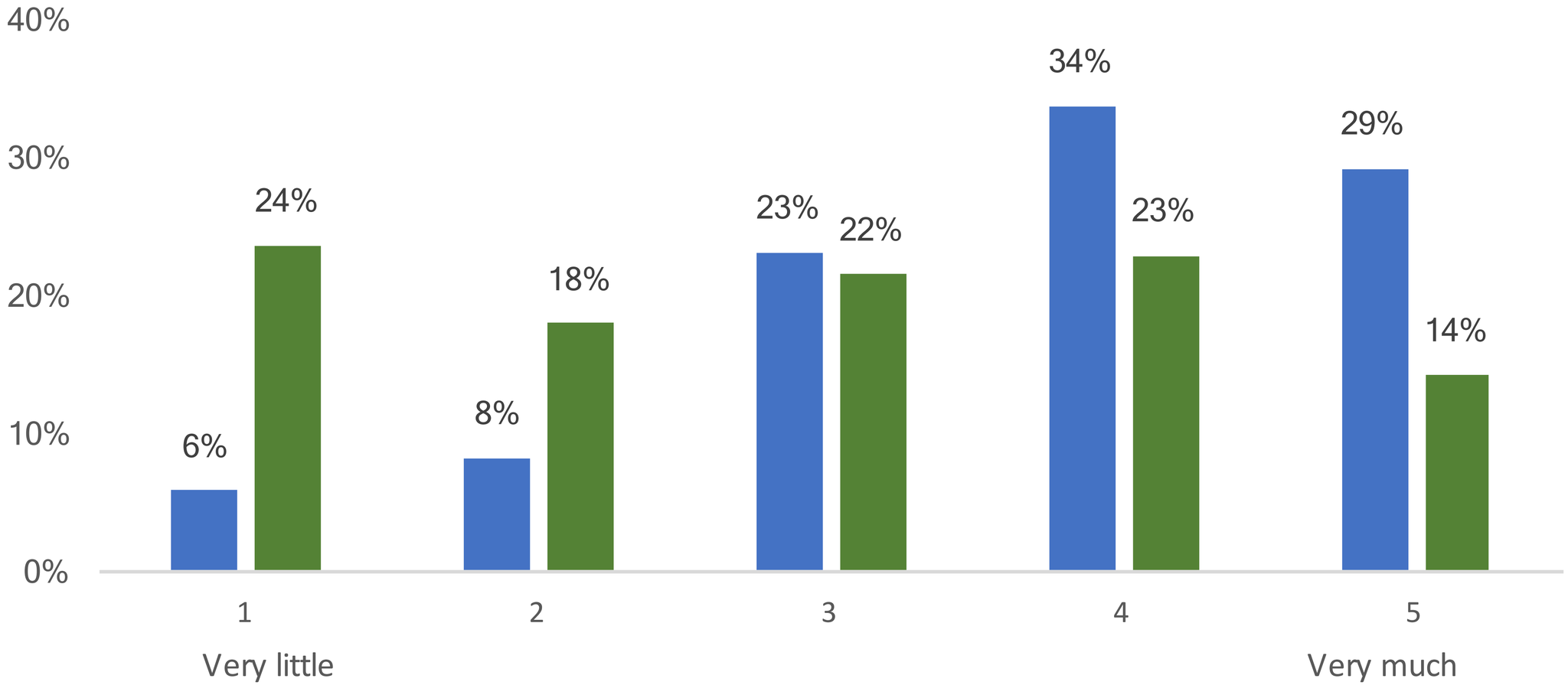


Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey

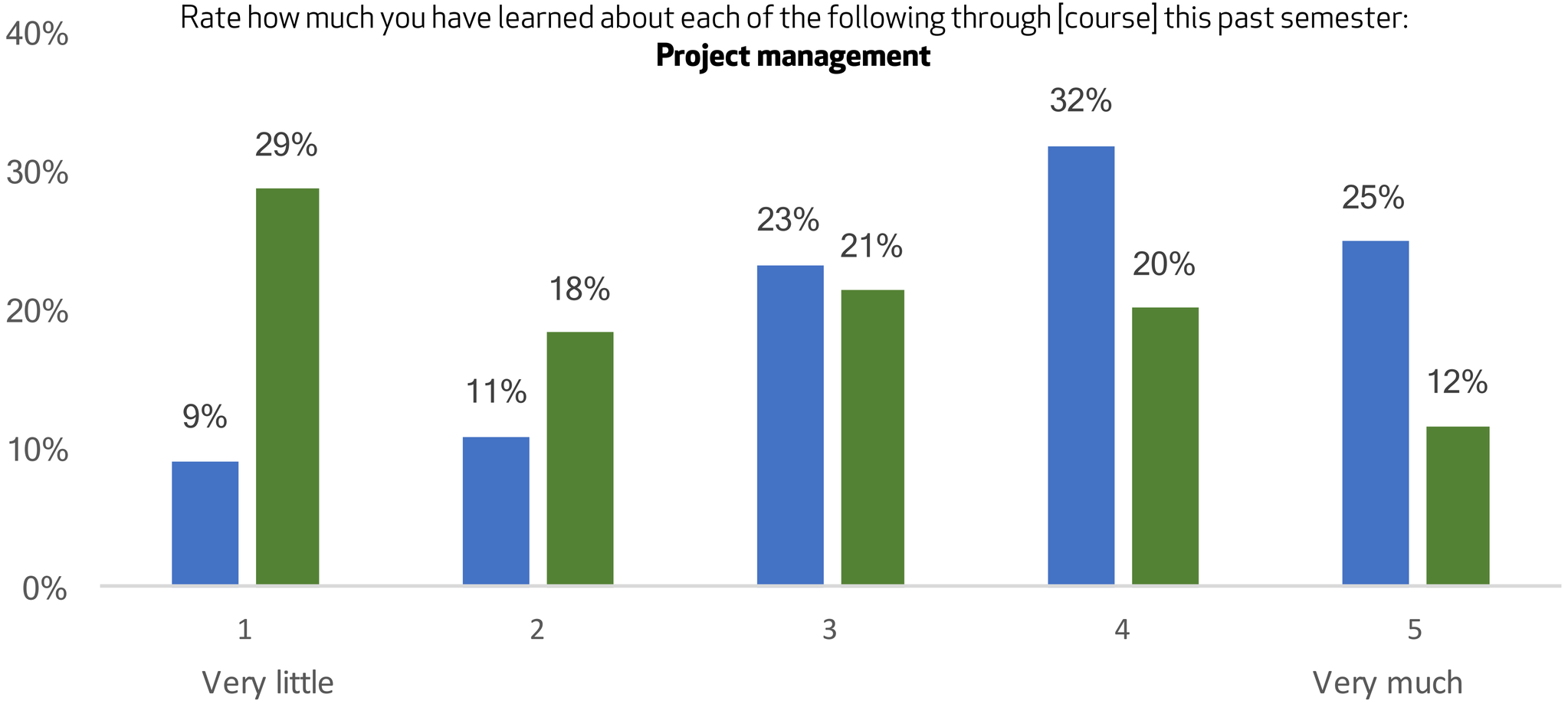
Rate how much you have learned about each of the following through [course] this past semester: **Popular industry tool(s**)



Preparation for the future:

GitHub versus non GitHub classrooms

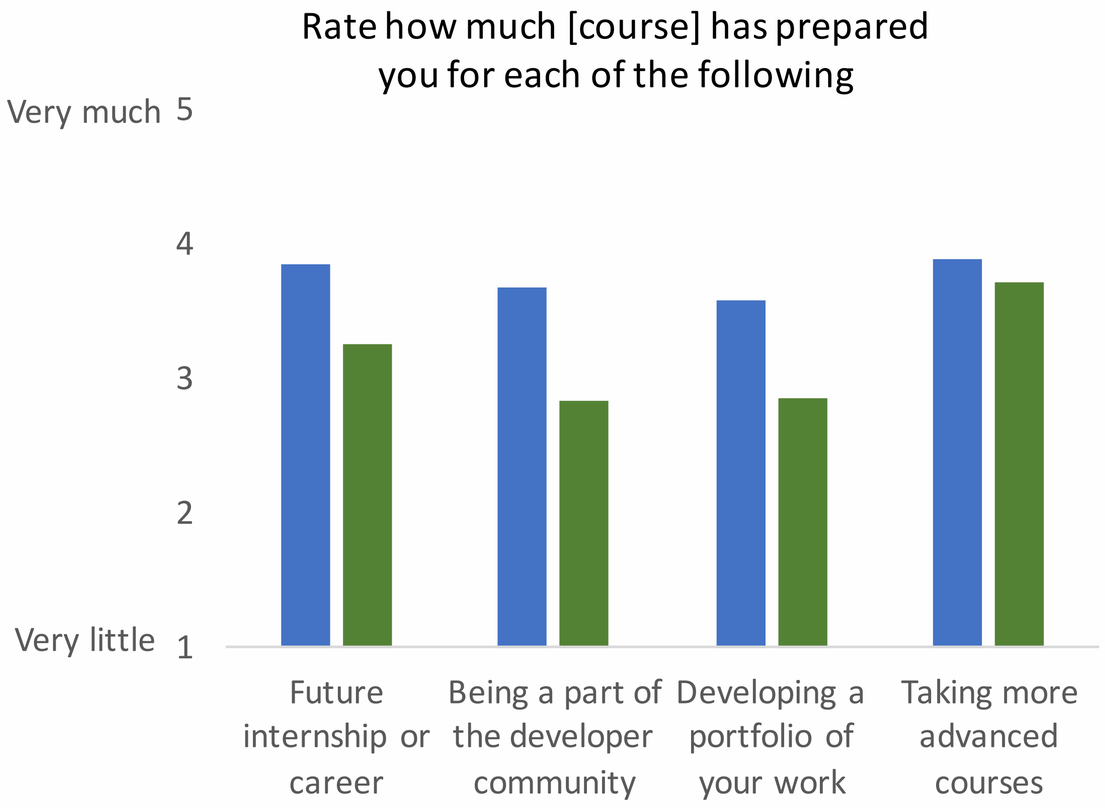
Student Survey



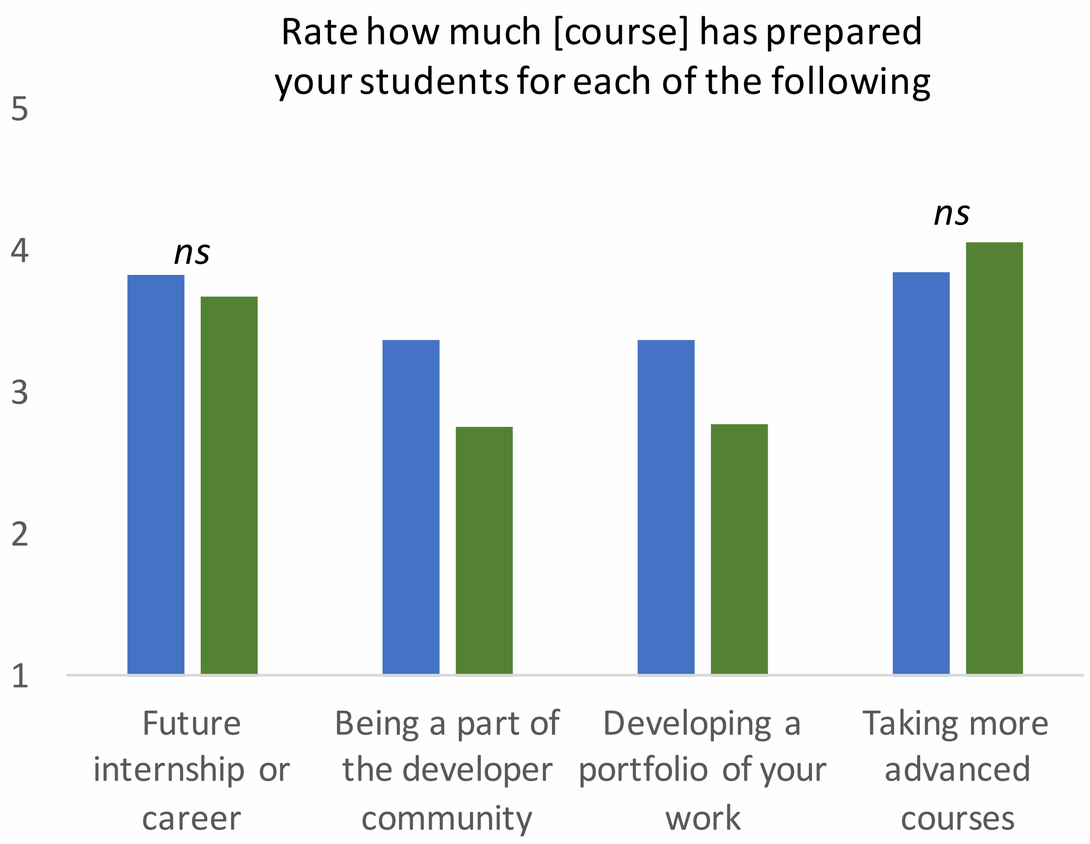
Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey



Teacher Survey

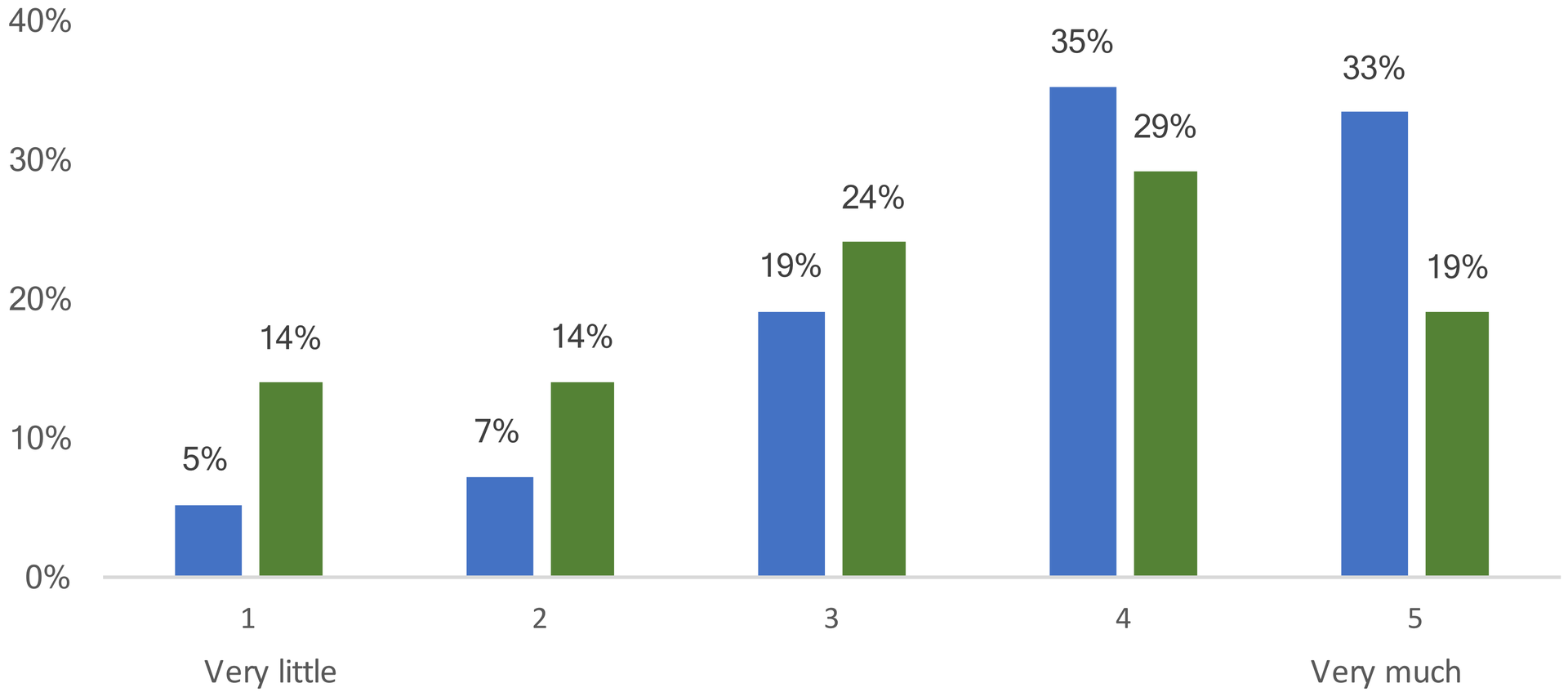


Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey

Rate how much [course] has prepared you for each of the following: **Future internship or career**

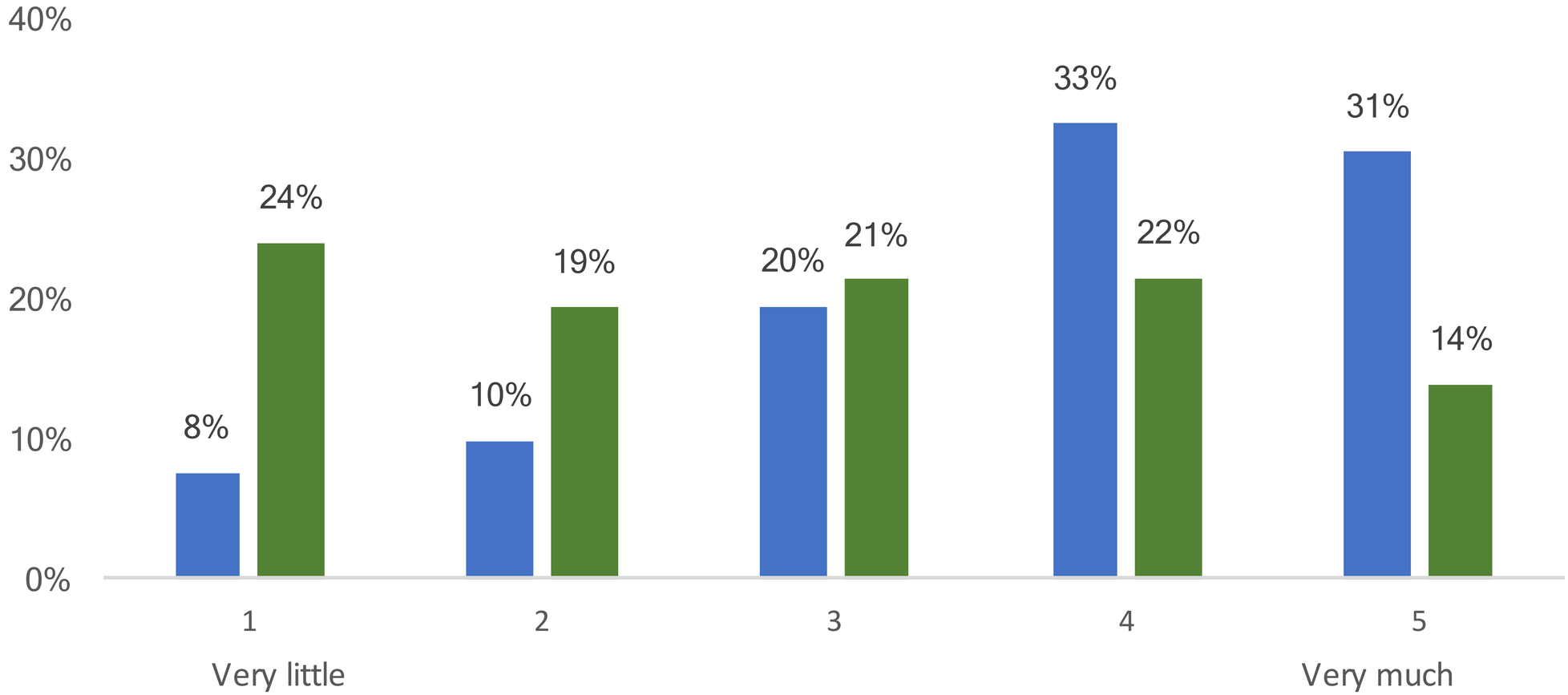


Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey

Rate how much [course] has prepared you for each of the following: **Being a part of the developer community**

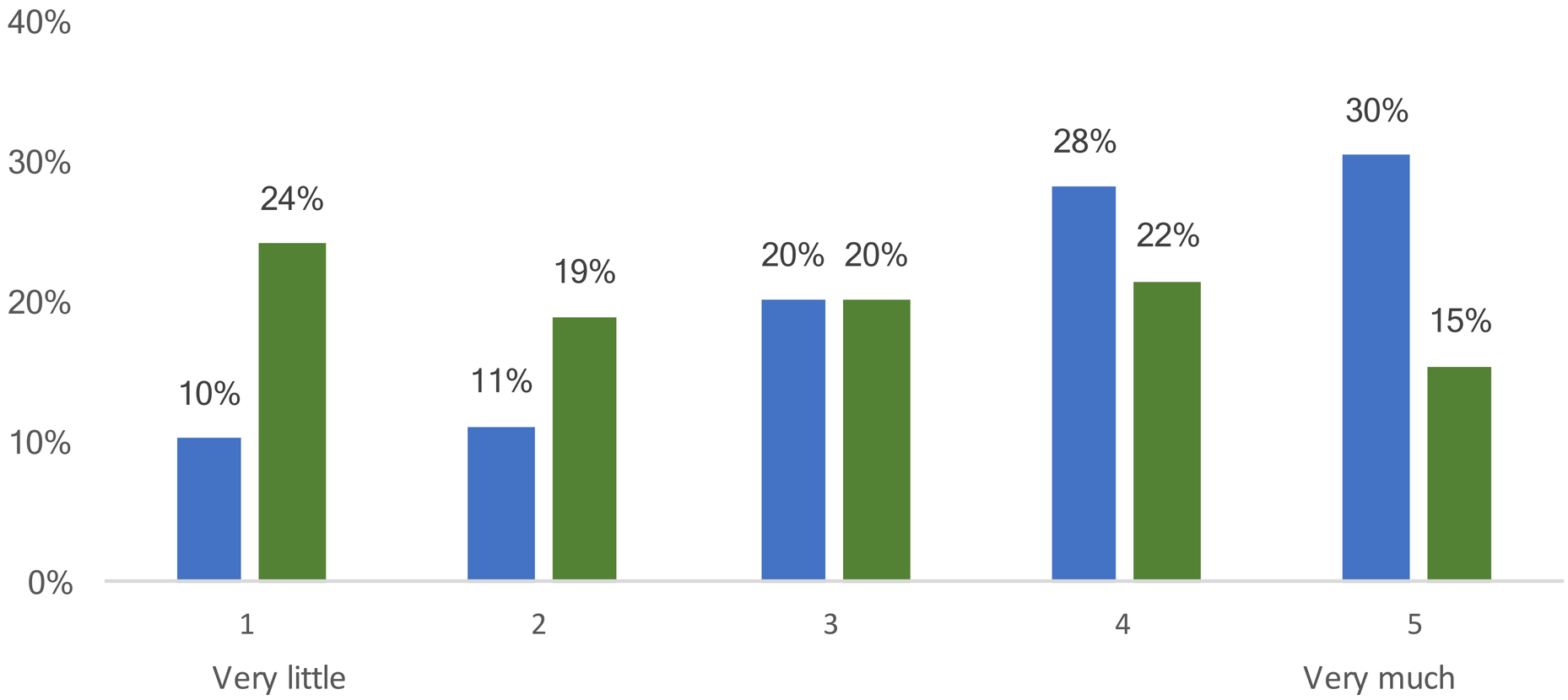


Preparation for the future:

GitHub versus non GitHub classrooms

Student Survey

Rate how much [course] has prepared you for each of the following: **Developing a portfolio of your own work**

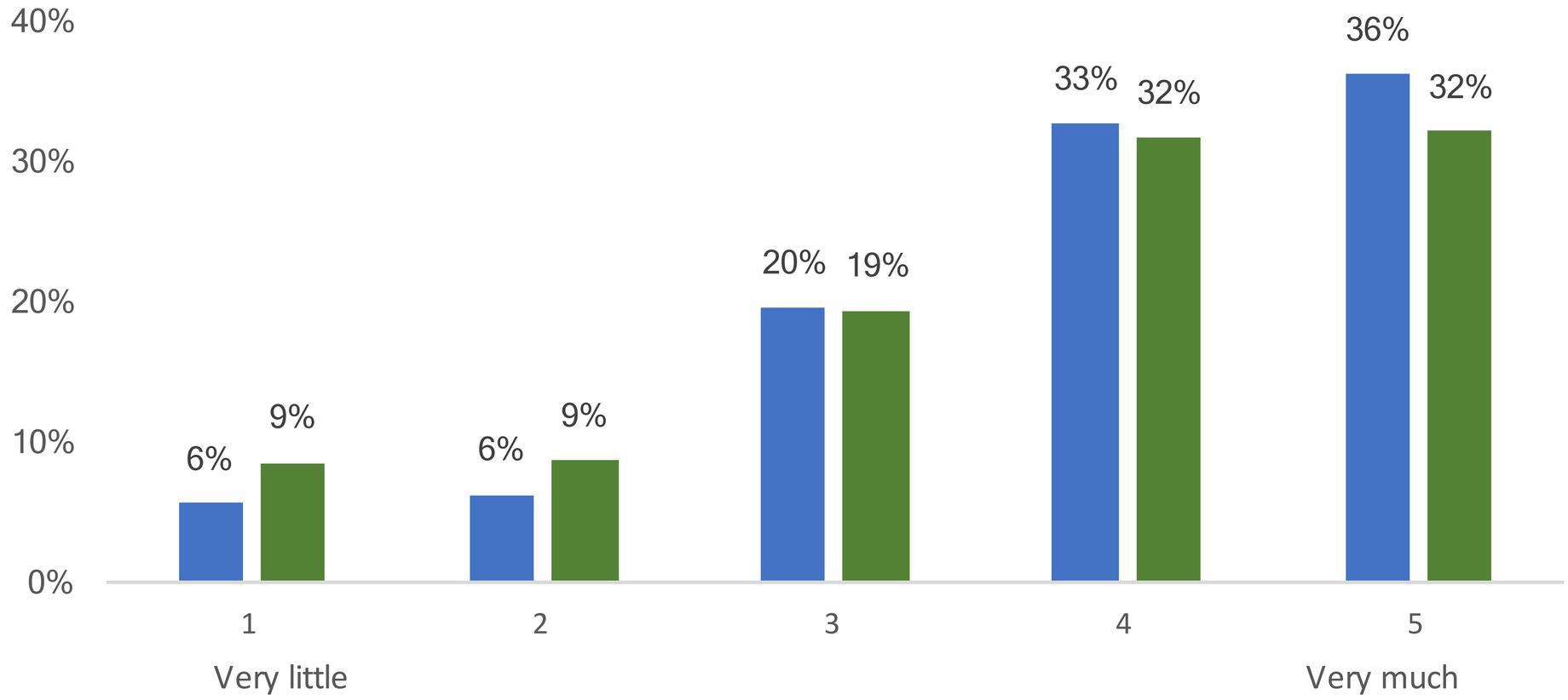


Preparation for the future:

GitHub versus non GitHub classrooms

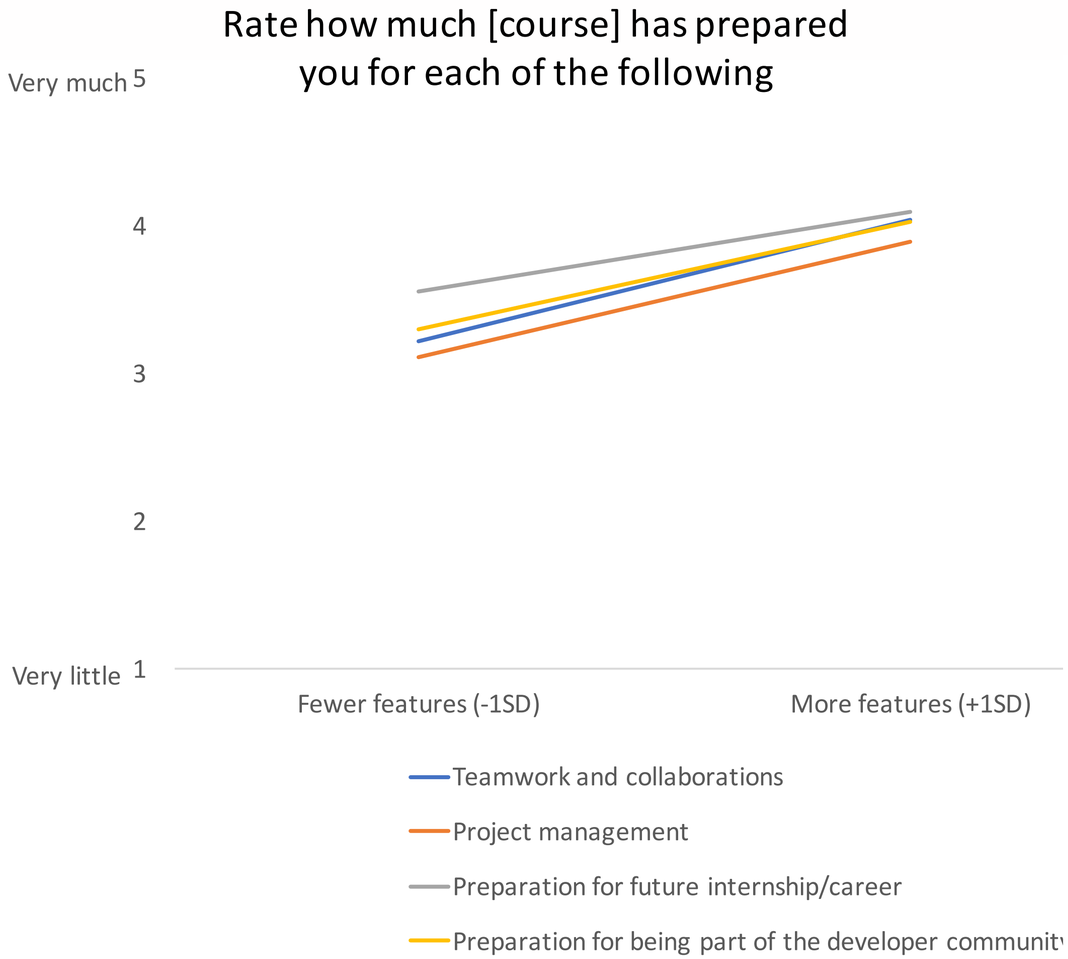
Student Survey

Rate how much [course] has prepared you for each of the following: **Taking more advanced courses**

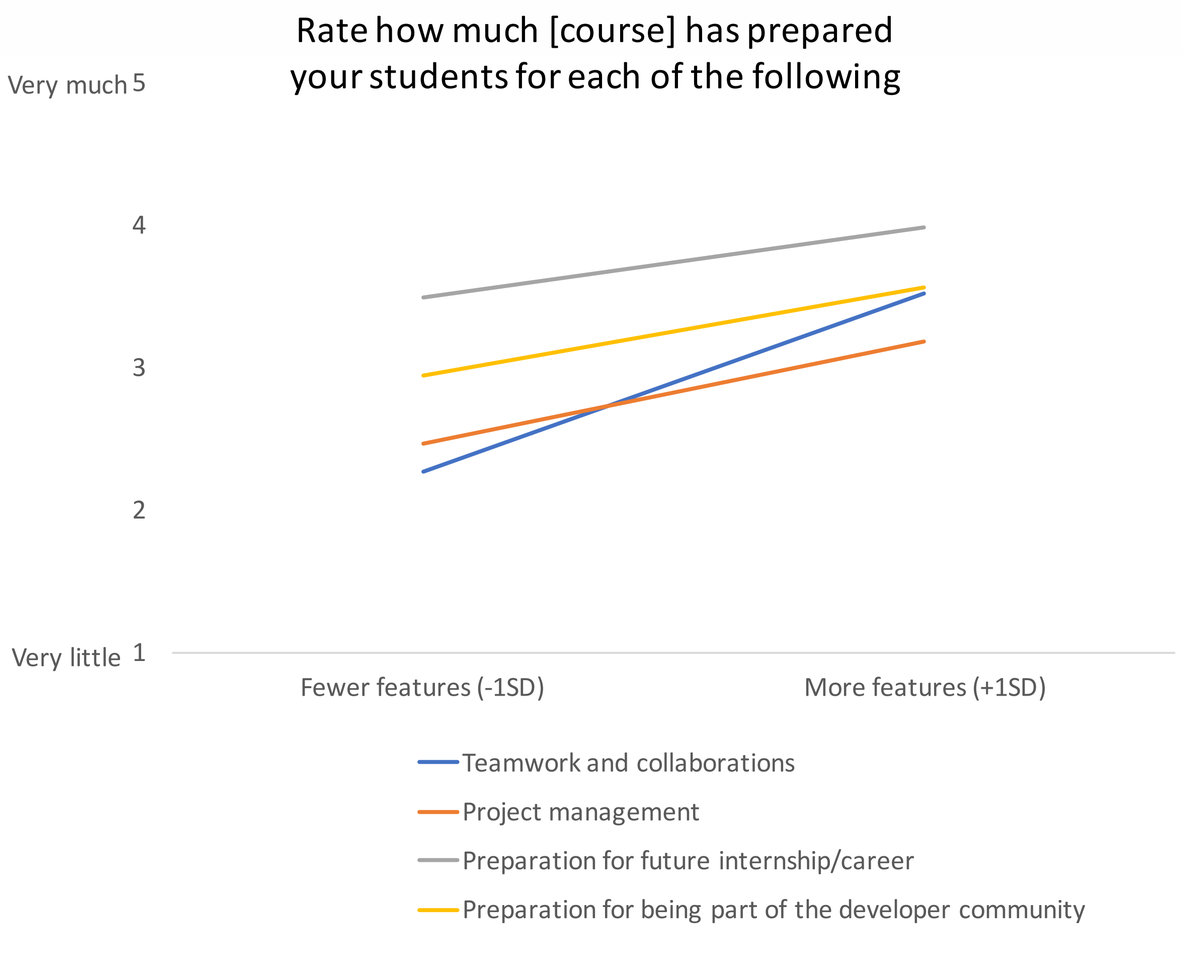


Preparation for the future:

Student Survey



Teacher Survey



Learning Outcomes: Classroom experience

Classroom experience:

Key takeaways

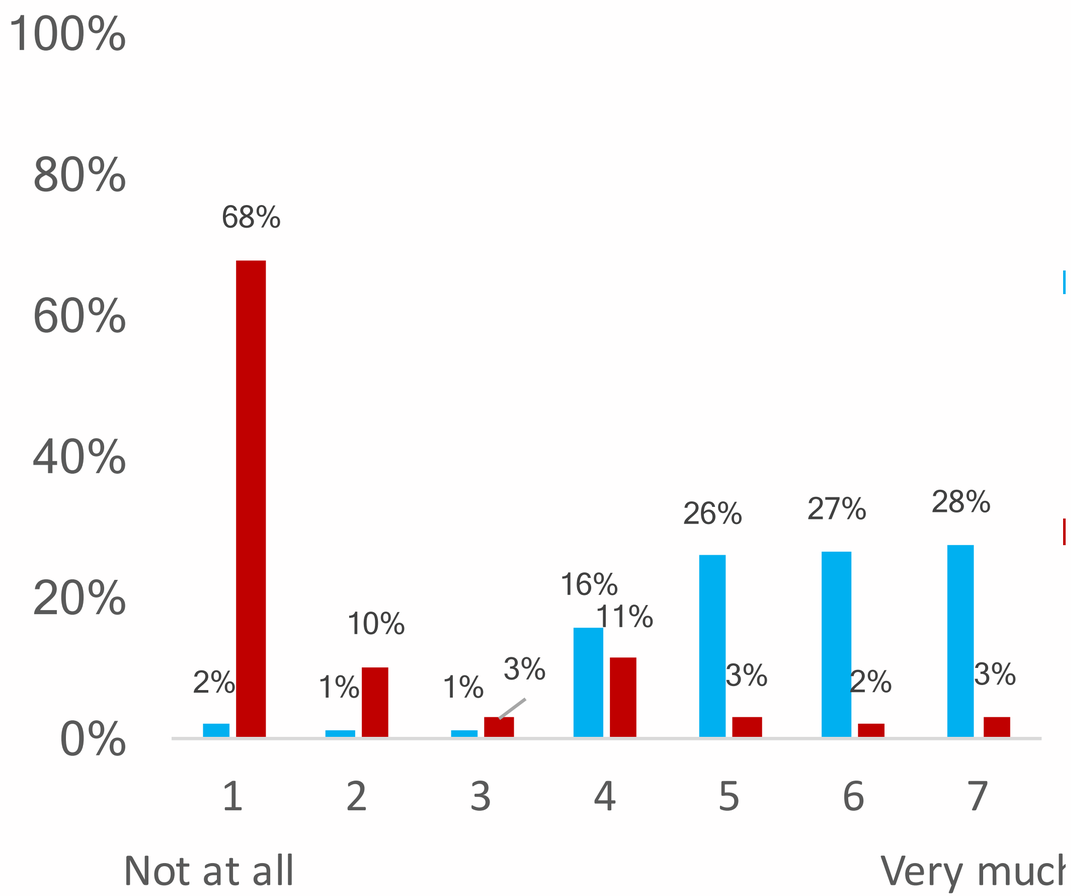
Using GitHub (versus not using GitHub) in programming classes predicted greater positive learning outcomes.

- Overall, students and teachers felt using GitHub in the classroom improved rather than worsened students' learning experience.
- Although implementation of GitHub in the classroom had no effect on teachers' reports of student engagement, participation, and attendance, using GitHub in the classroom predicted slightly higher student ratings across the three variables.
- Students who used GitHub in the classroom tend to like their class more and put more effort into the class than students who did not use GitHub in the classroom. Students who used GitHub in the classroom were also more likely to recommend their class to others and take similar courses in the future.
- Students in GitHub (versus non GitHub) classrooms felt more competent. They were also more likely to feel like they have the skills necessary to do well and satisfied with their performance in the class.

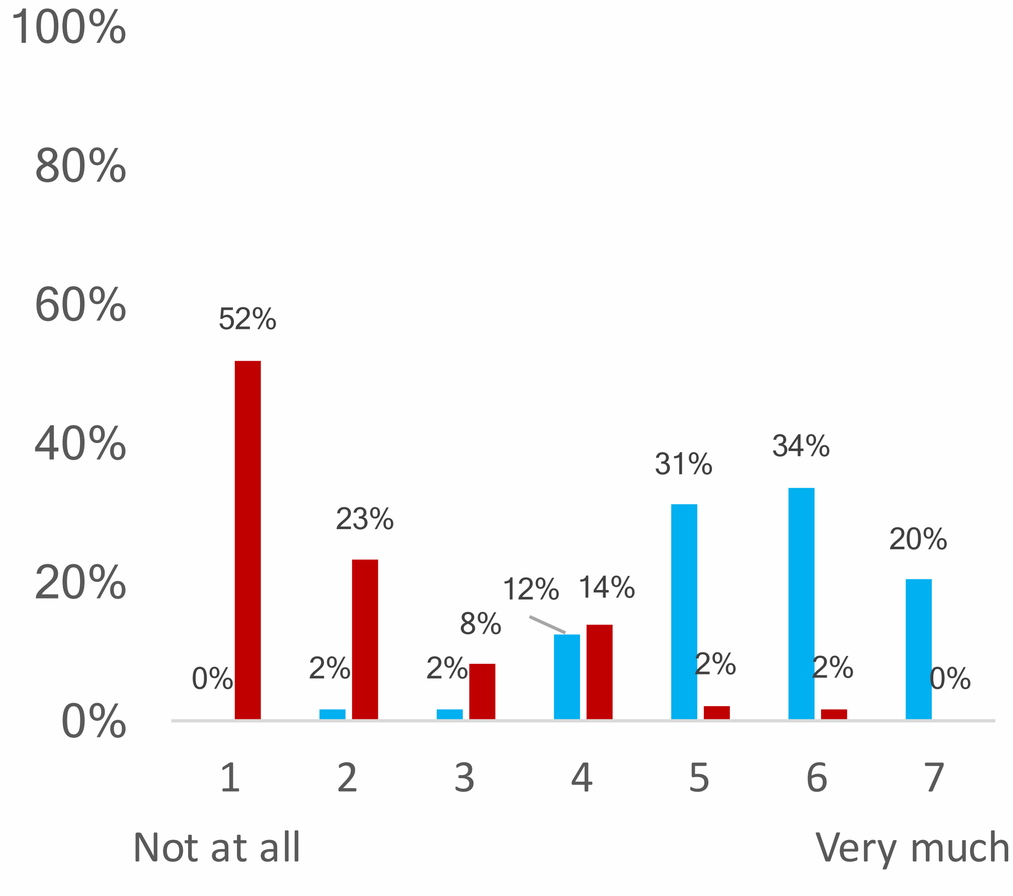
Classroom experience:

Does using GitHub in the classroom **improve** or **worsen** the learning experience?

Student Survey



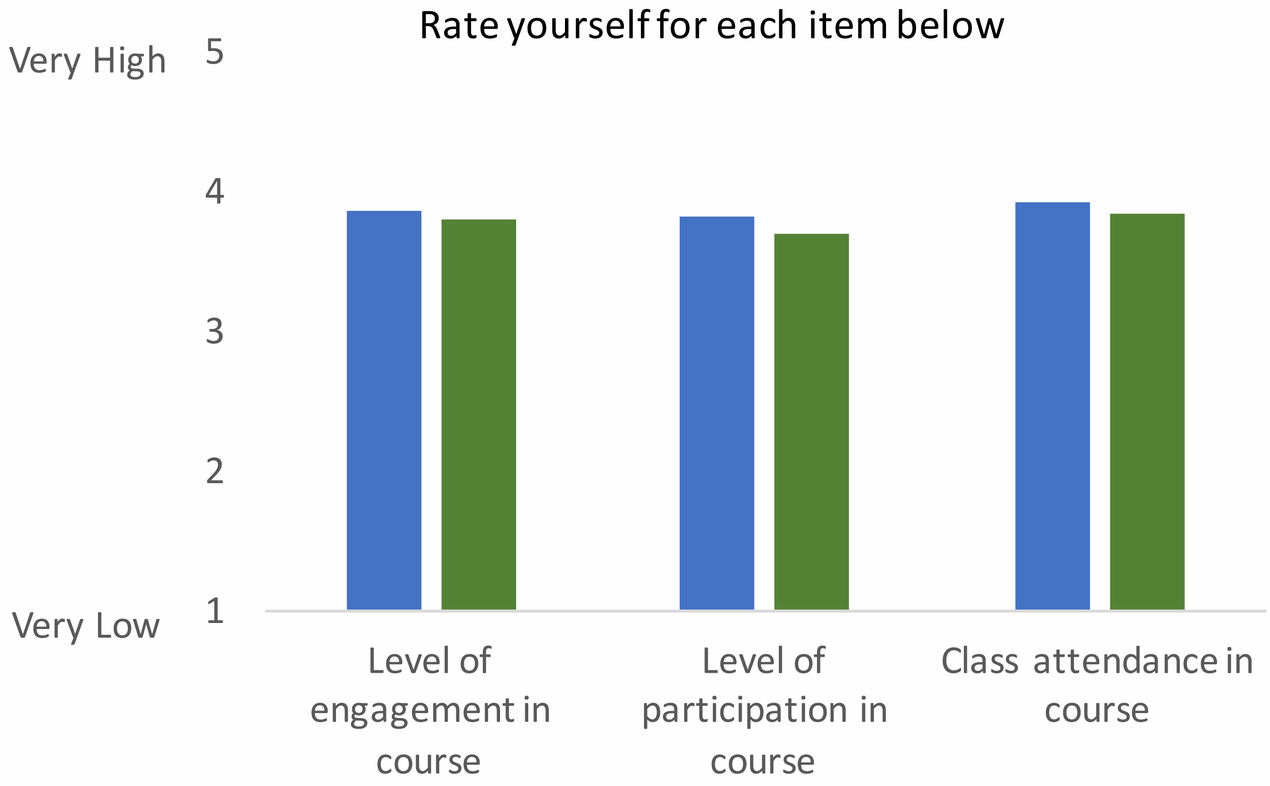
Teacher Survey



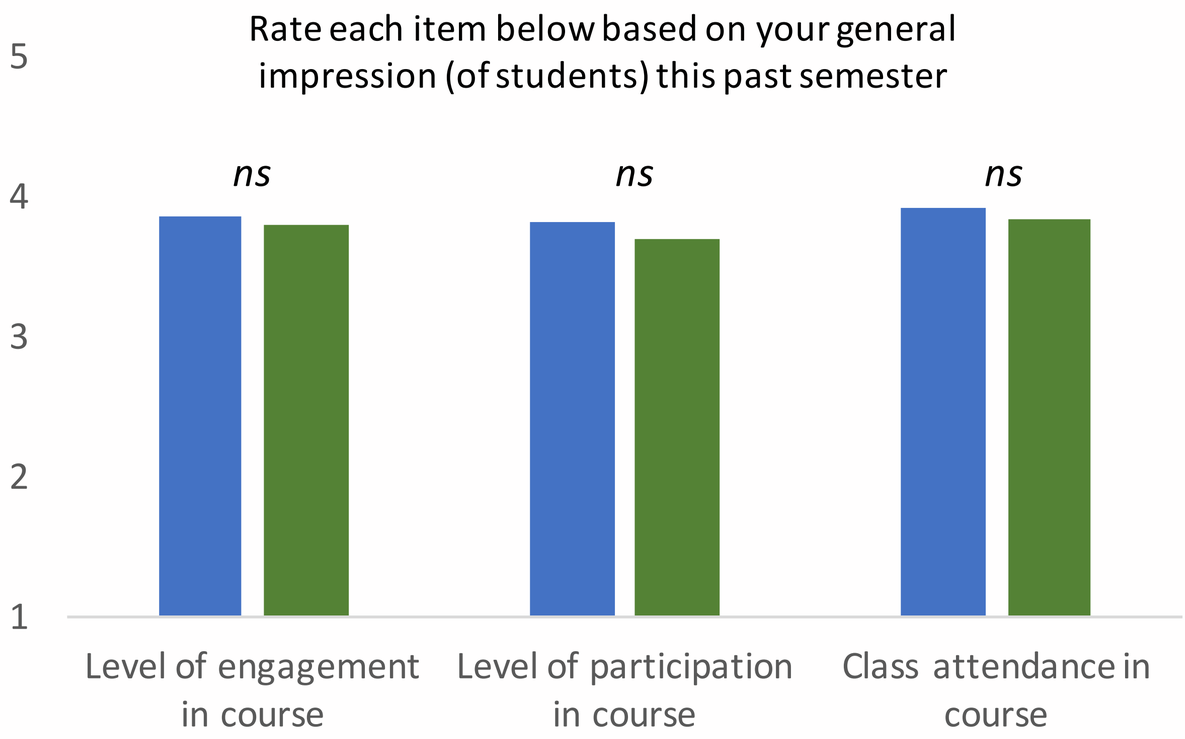
Classroom experience:

GitHub versus non GitHub classrooms

Student Survey



Teacher Survey

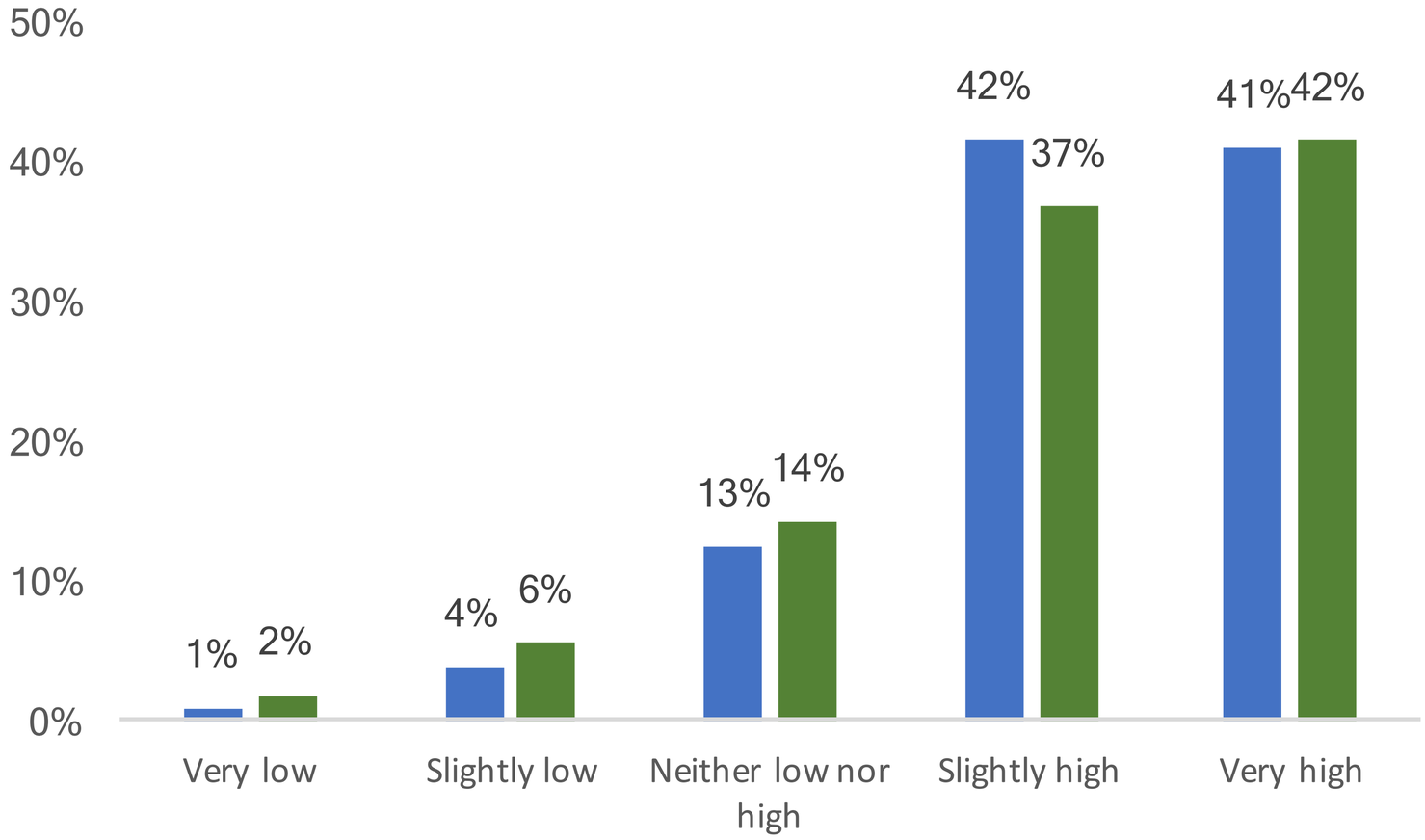


Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

Rate how much you have learned about each of the following through [course] this past semester: **Level of engagement**

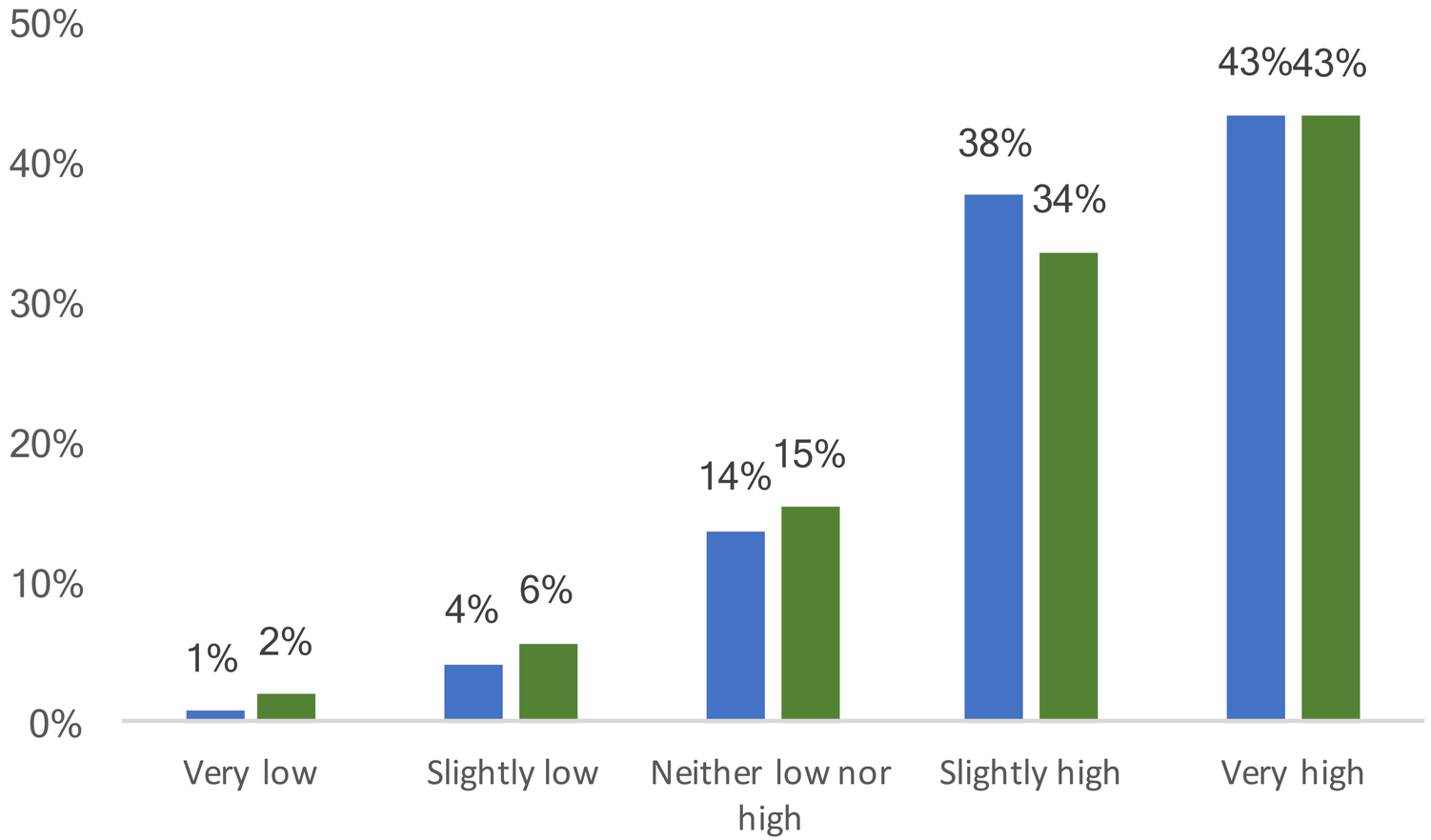


Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

Rate how much you have learned about each of the following through [course] this past semester: **Your level of participation in [course]**

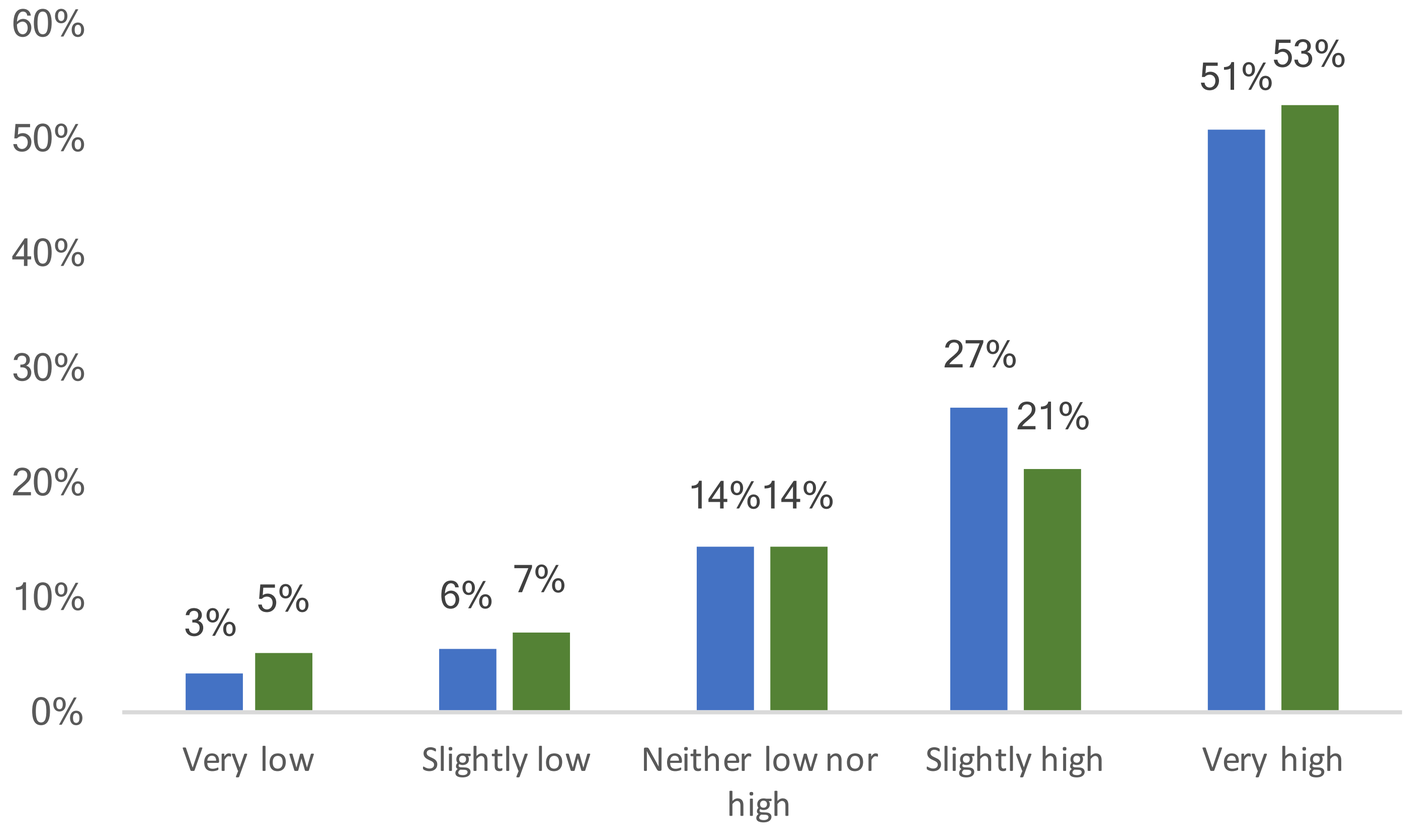


Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

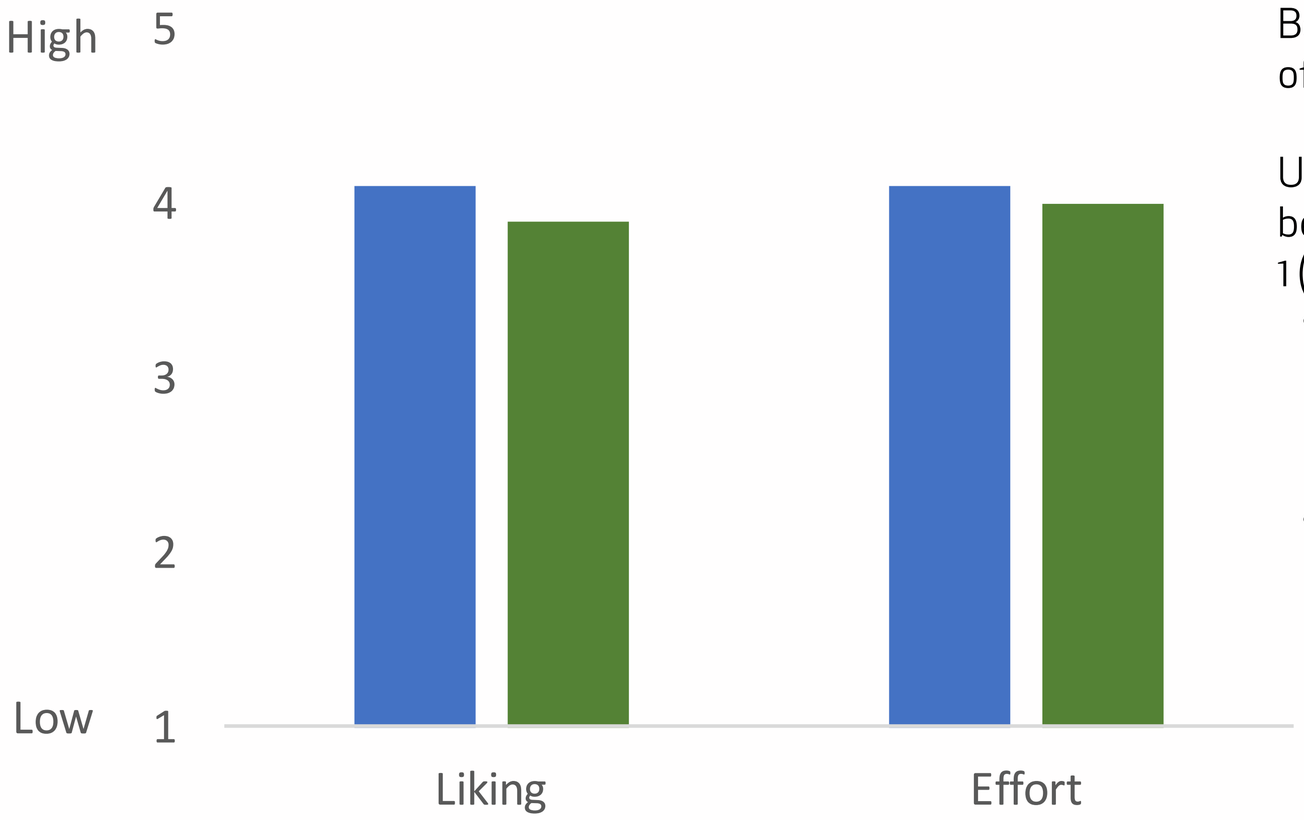
Rate how much you have learned about each of the following through [course] this past semester: **Your class attendance in [course]**



Classroom experience:

GitHub versus non GitHub classrooms

Student Survey



Both liking and effort variables were composite scores of multiple items:

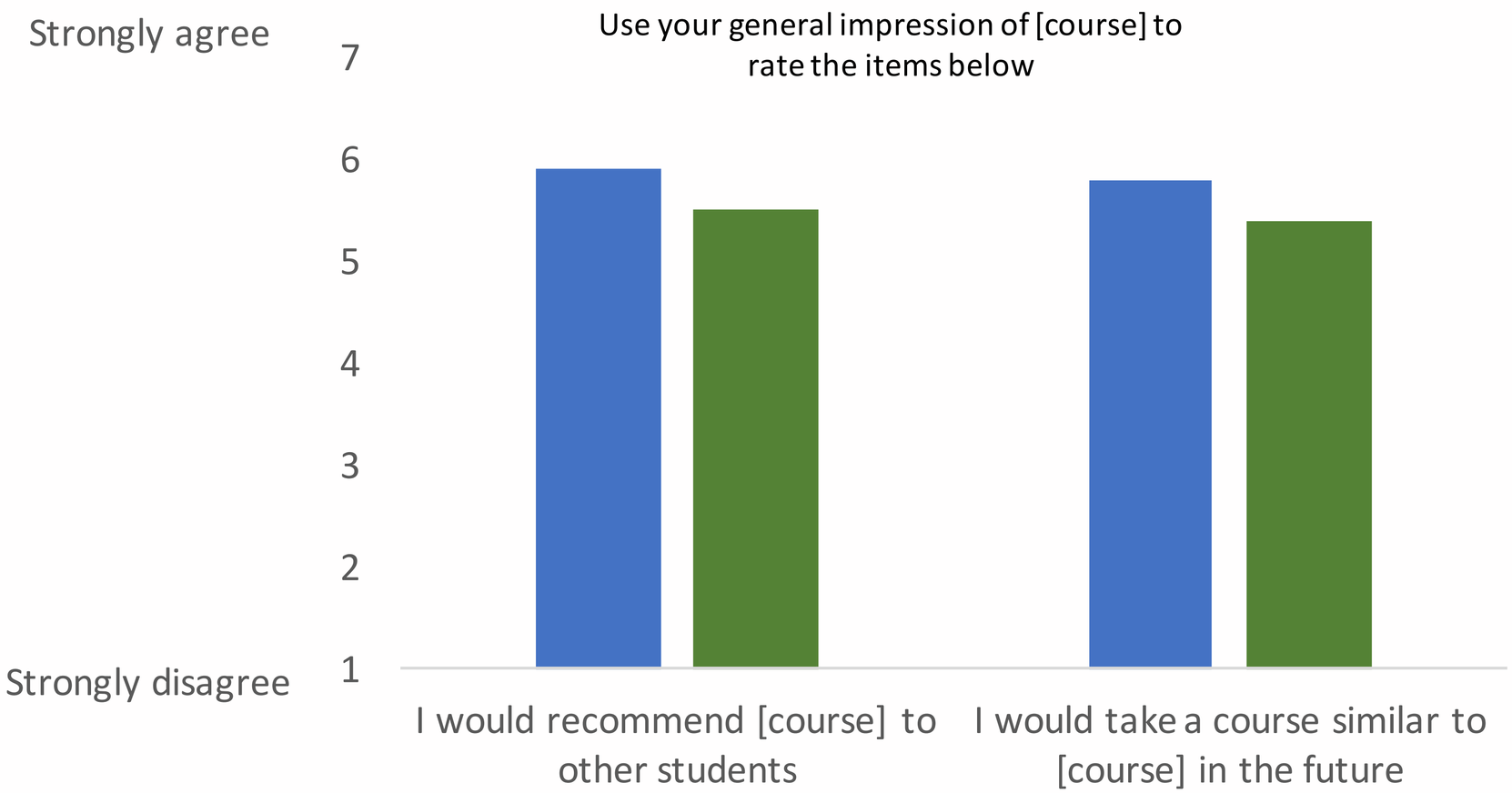
Use your general impression of [course] to rate the items below
1 (Not at all true) to 5 (Very true)

- Liking:
  - I enjoy [course] very much.
  - [Course] holds my attention very well.
  - I would describe [course] as very interesting.
- Effort:
  - I put a lot of effort into [course]
  - It's important to me to do well in [course]
  - I put a lot of energy into [course]

Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

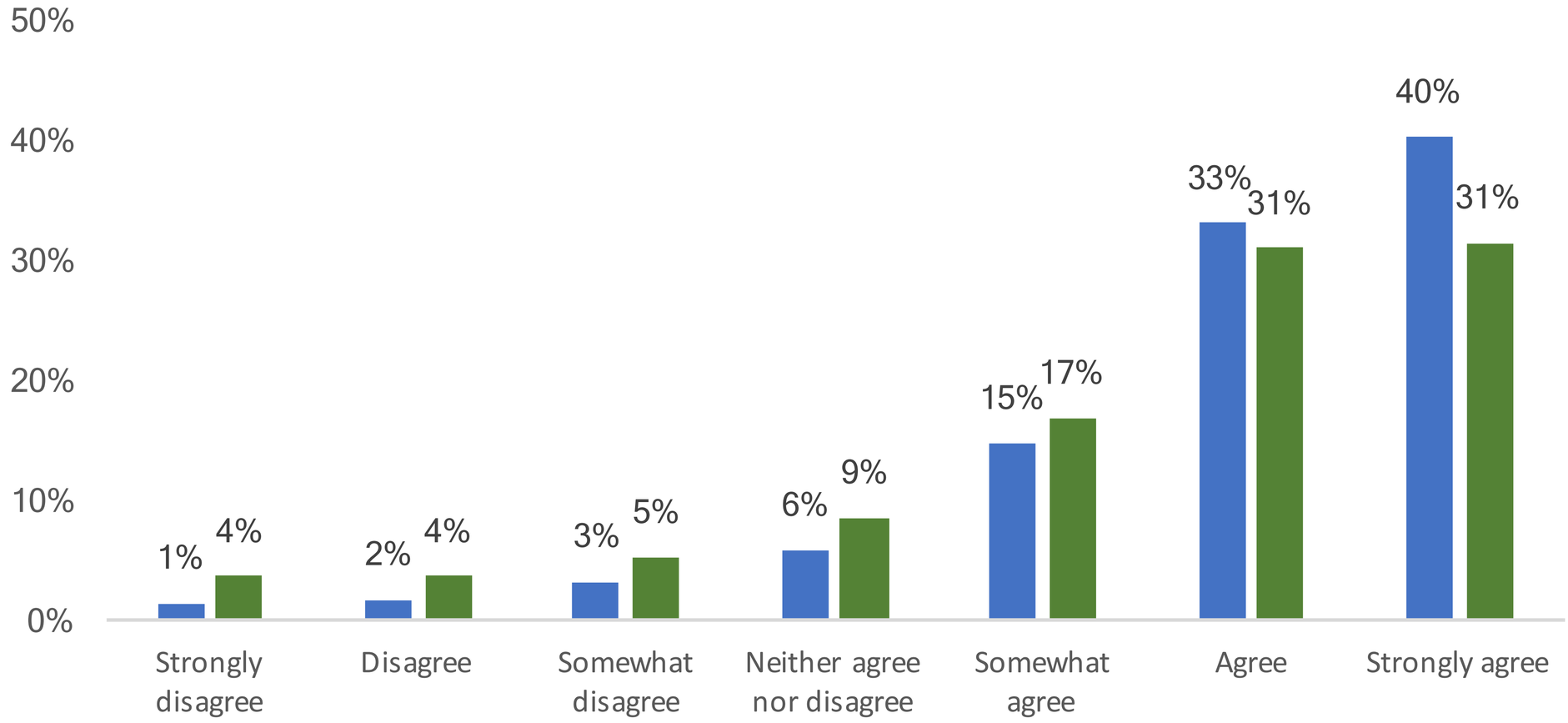


Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

Use your general impression of [course] to rate the items below: **I would recommend [course] to other students**

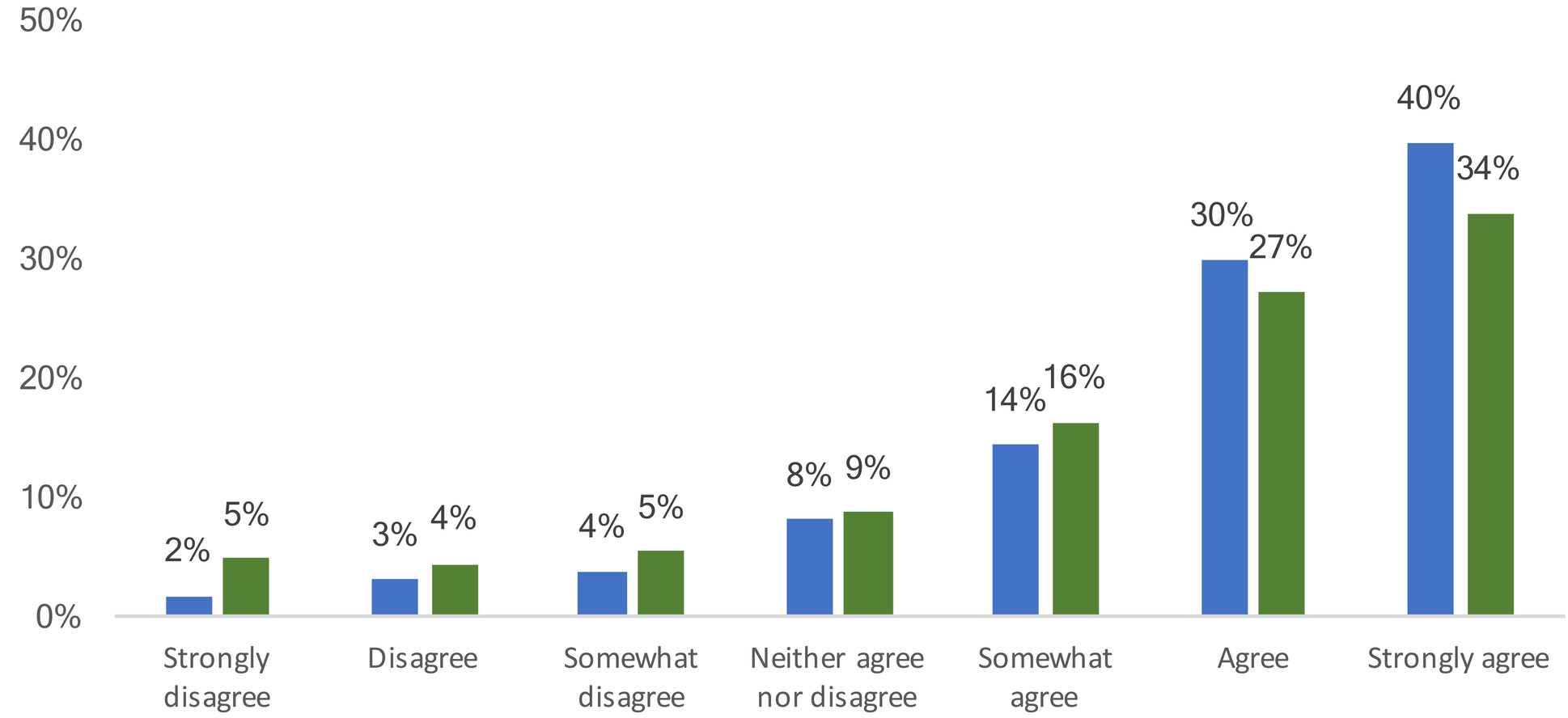


Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

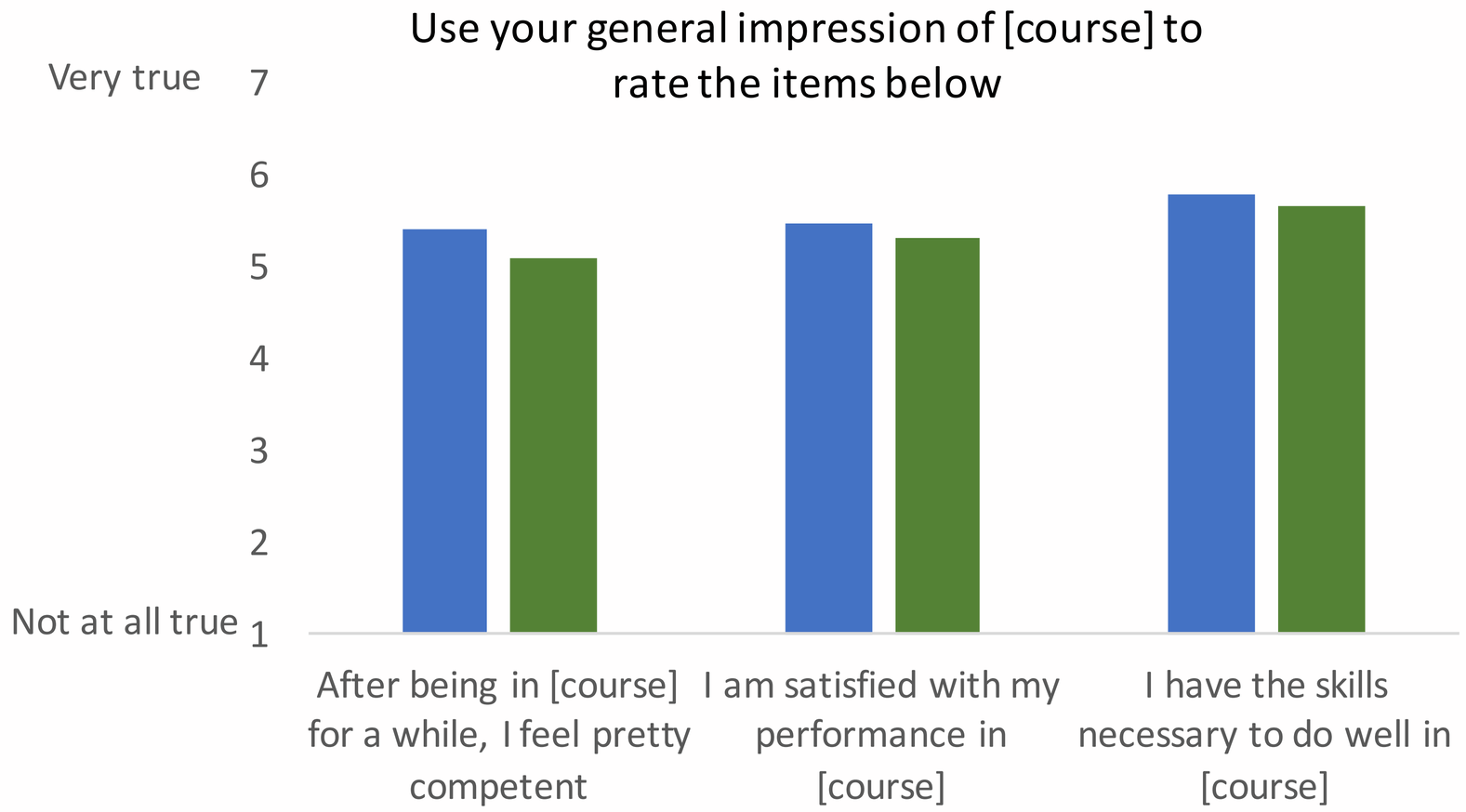
Use your general impression of [course] to rate the items below: **I would take a course similar to [course] in the future**



Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

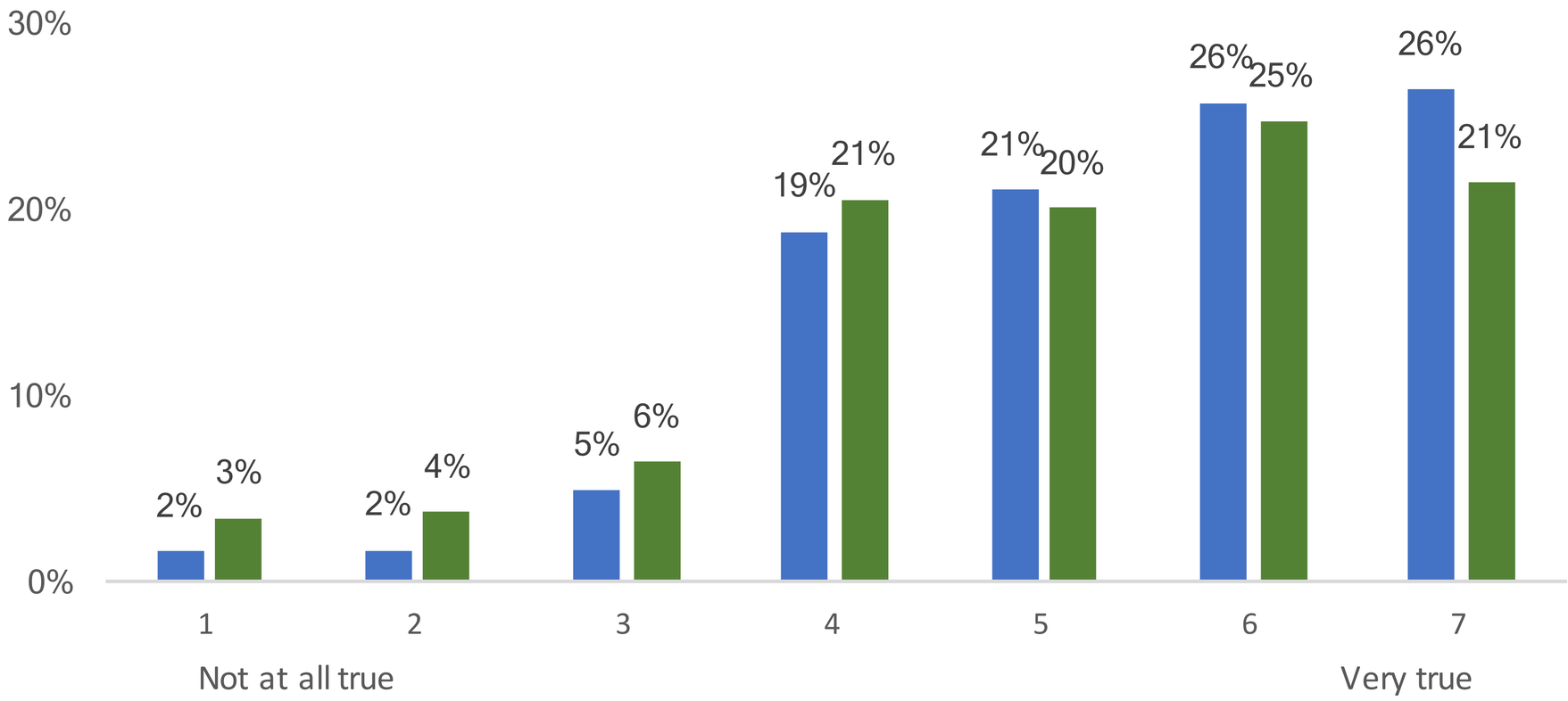


Classroom experience:

GitHub versus non GitHub classrooms

Student Survey

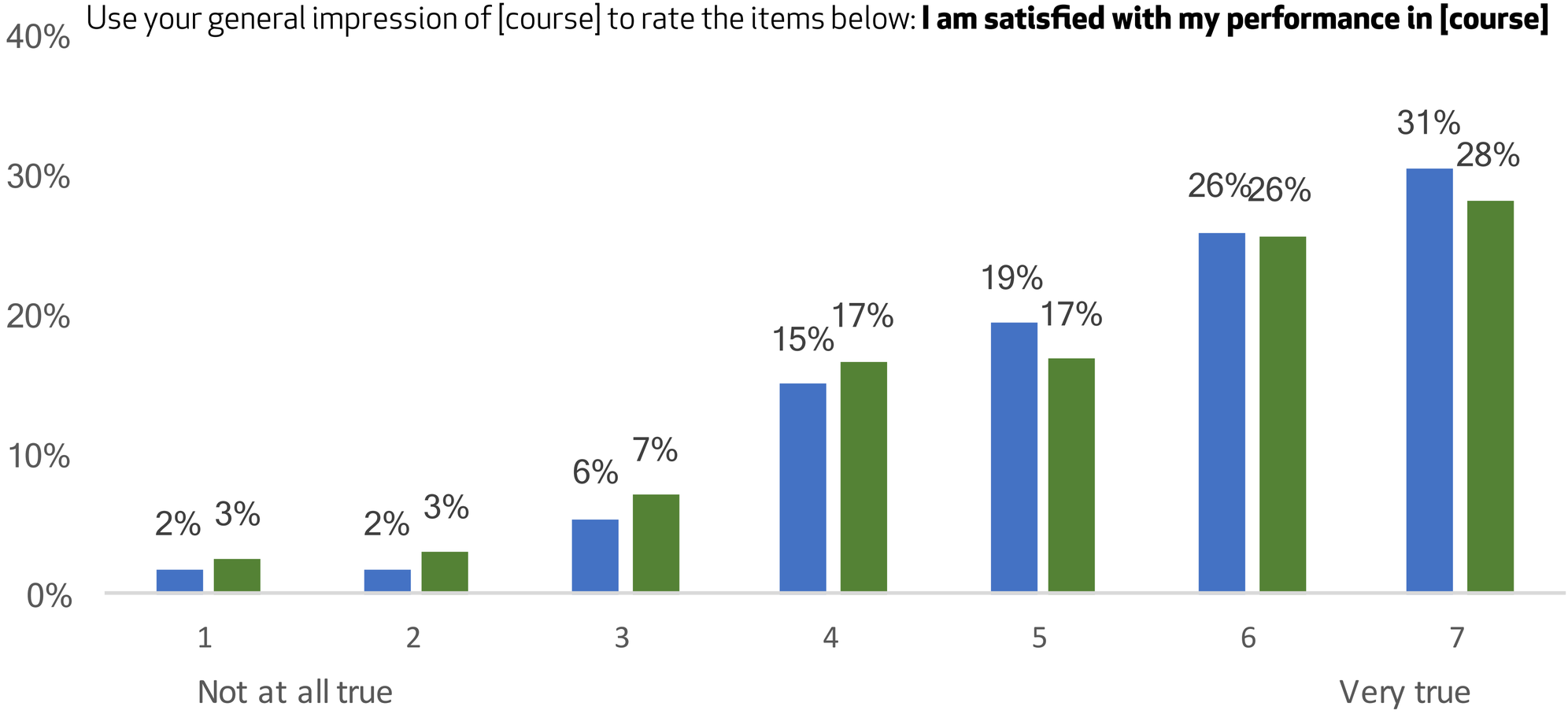
Use your general impression of [course] to rate the items below: **After being in [course] for a while, I feel pretty competent**



Classroom experience:

GitHub versus non GitHub classrooms

Student Survey



Classroom experience:

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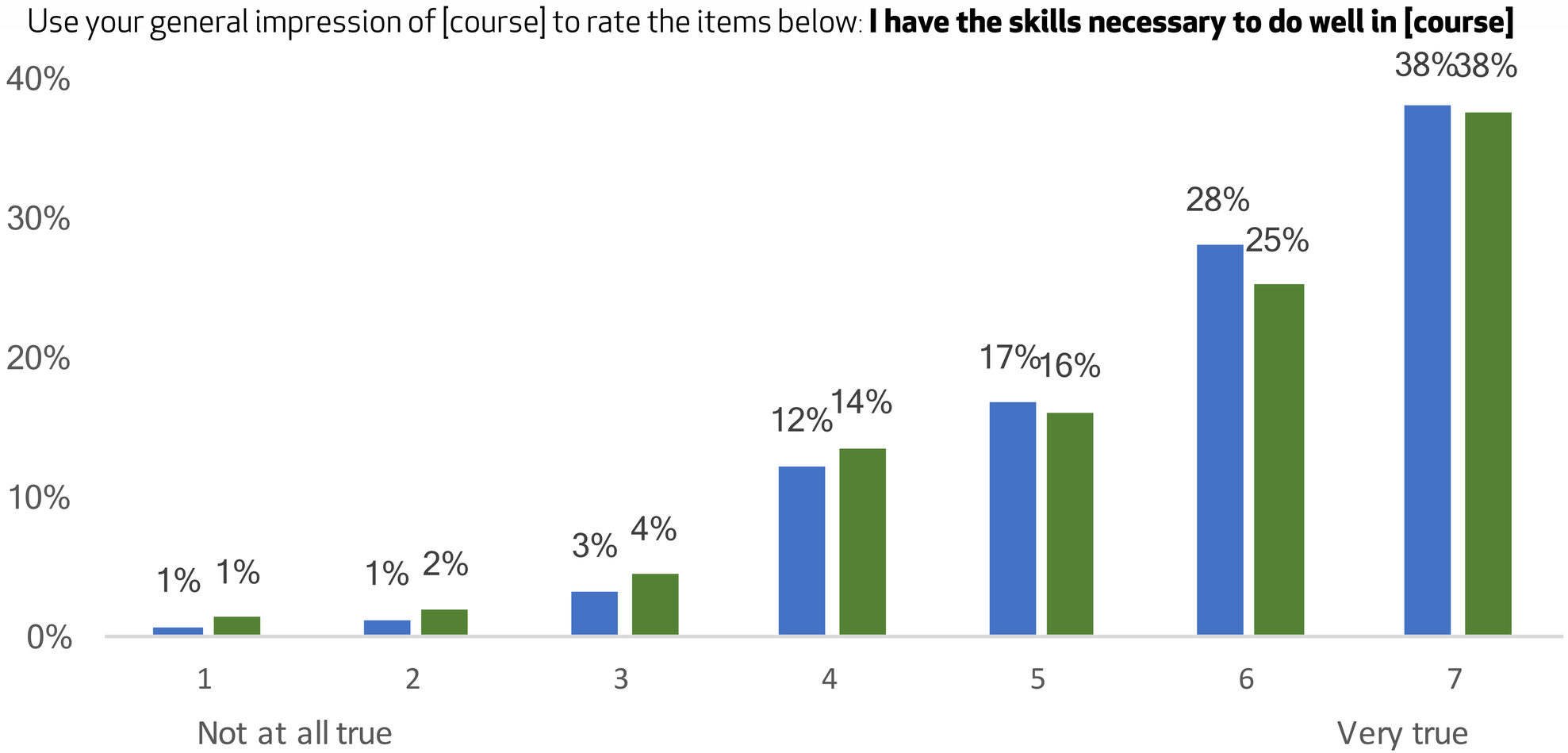
Student Survey



Sense of Belonging

Sense of belonging:

Key takeaways

Using GitHub (versus not using GitHub) in programming classes predicted a greater sense of belonging, a variable important to academic success.

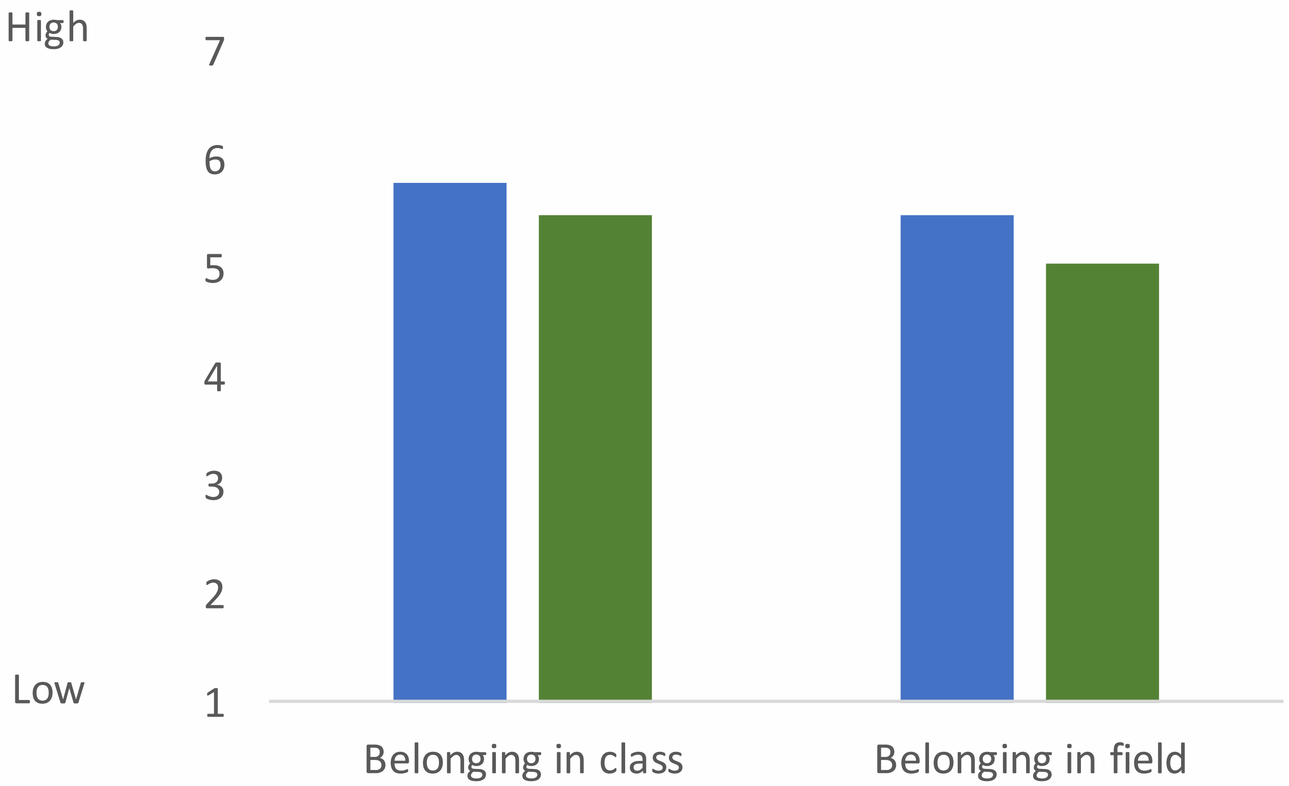
- Students felt greater belonging both in the classroom and in the field.
- This finding could be related to several other findings from this study:

1. On average, there was greater emphasis on group assignments in GitHub (versus non GitHub) classrooms. Working more closely and cooperatively with peers may have boosted students' sense of belonging in the classroom.
2. Students in GitHub (versus non GitHub classrooms) felt more prepared for being part of the developer community, and felt they learned more about popular industry tools. These effects may have directly contributed to students' sense of belonging in the field.

Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey



Both **Belonging in class** and **Belonging in field** variables were composite scores of multiple items:

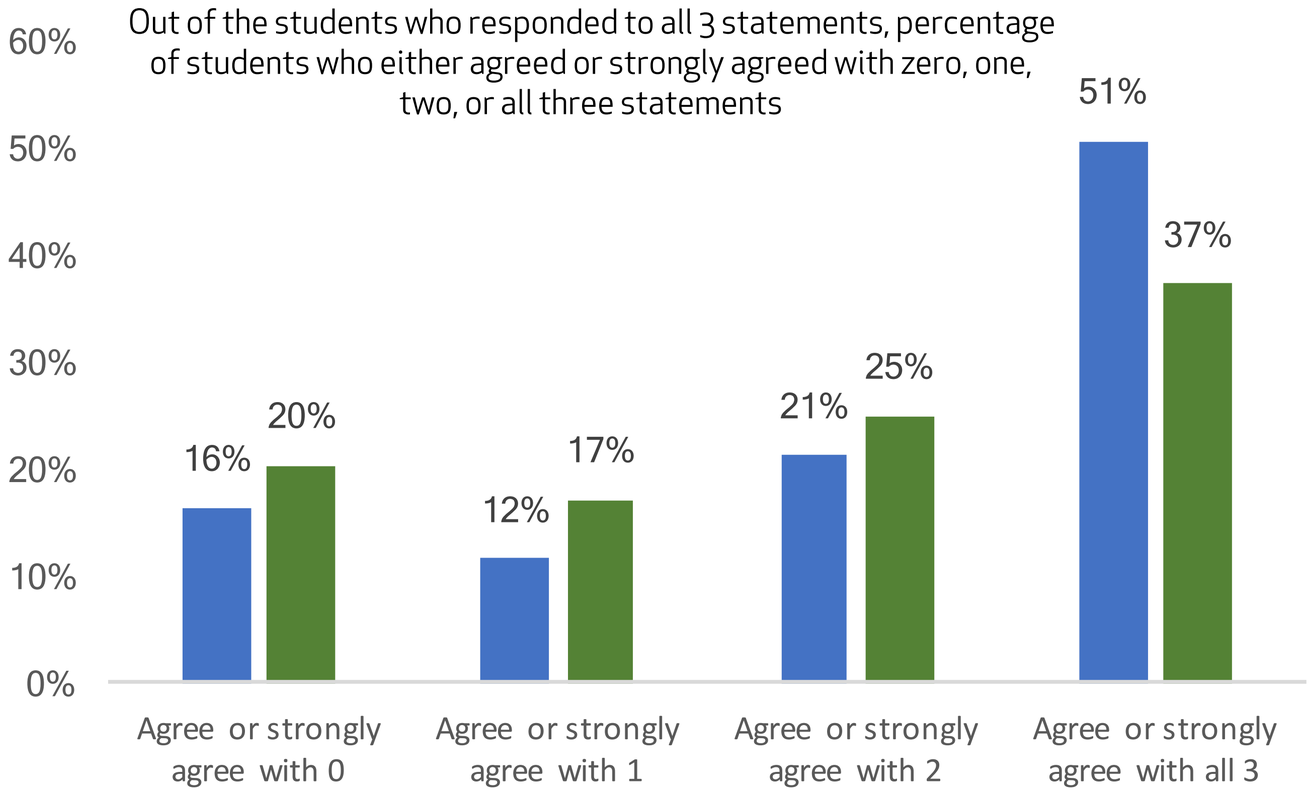
Use your general impression of [course] to rate the items below 1 (Strongly disagree) to 7 (Strongly agree)

- Belonging in class:
  - My contributions in [course] are valued
  - I feel comfortable in [course]
  - People in [course] accept me
- Belonging in field:
  - I see myself as part of the developer community
  - I feel that I am a member of the developer community
  - I feel a sense of belonging to the developer community

Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey



Belonging in class:

Use your general impression of [course] to rate the items below

1 (Strongly disagree) to 7 (Strongly agree)

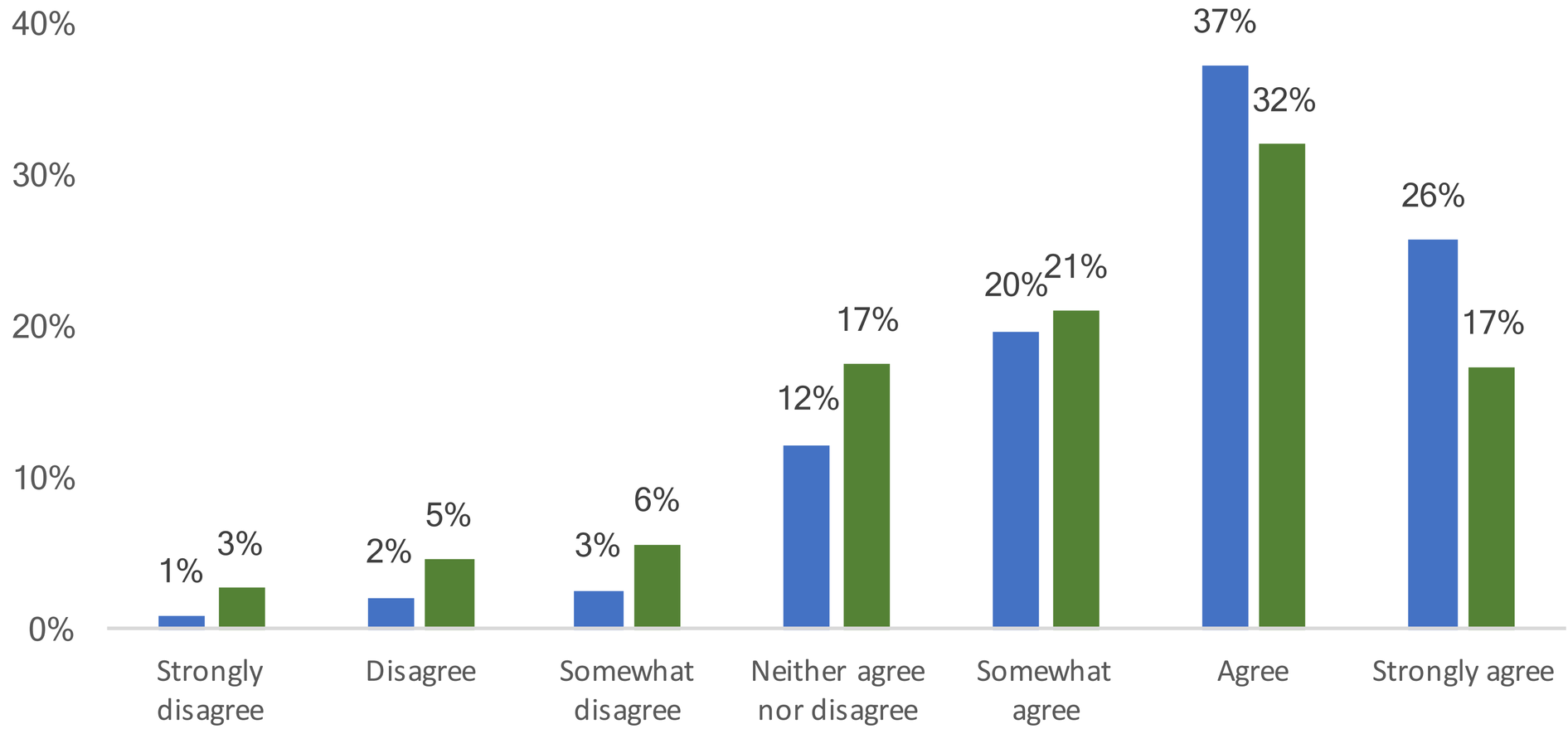
- My contributions in [course] are valued
- I feel comfortable in [course]
- People in [course] accept me

Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey

Use your general impression of [course] to rate the following: **My contributions in [course] are valued**

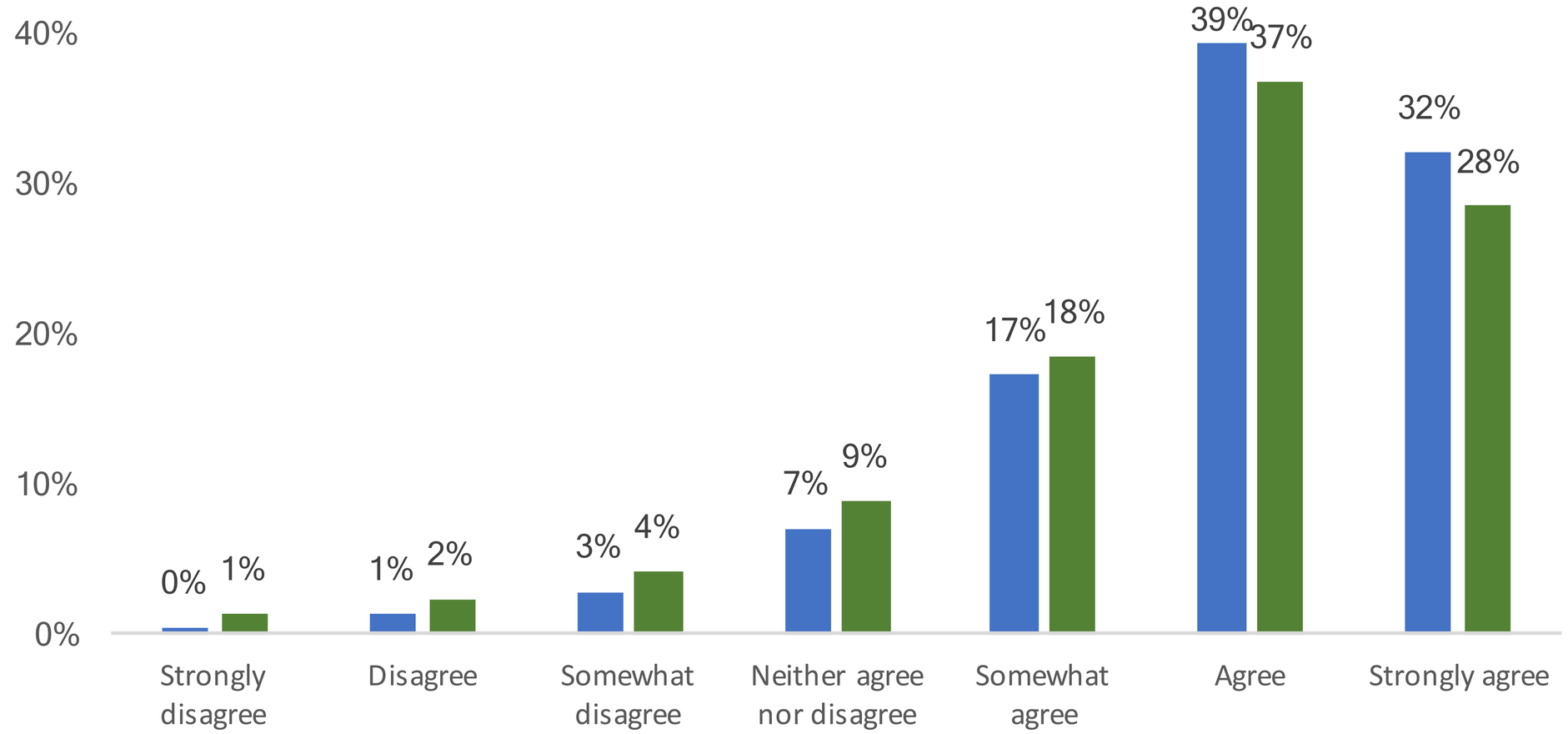


Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey

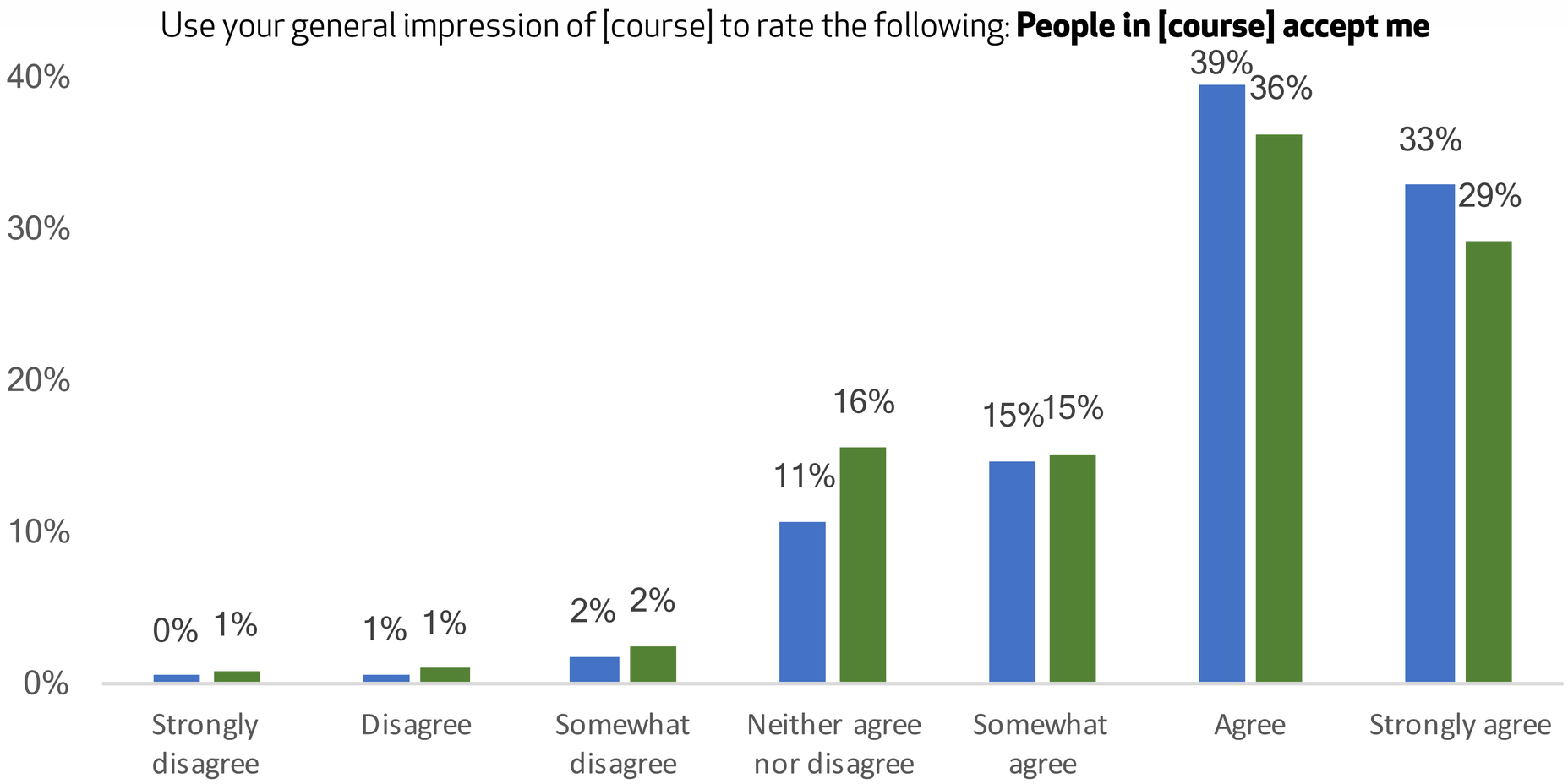
Use your general impression of [course] to rate the following: **I feel comfortable in [course]**



Sense of belonging:

GitHub versus non GitHub classrooms

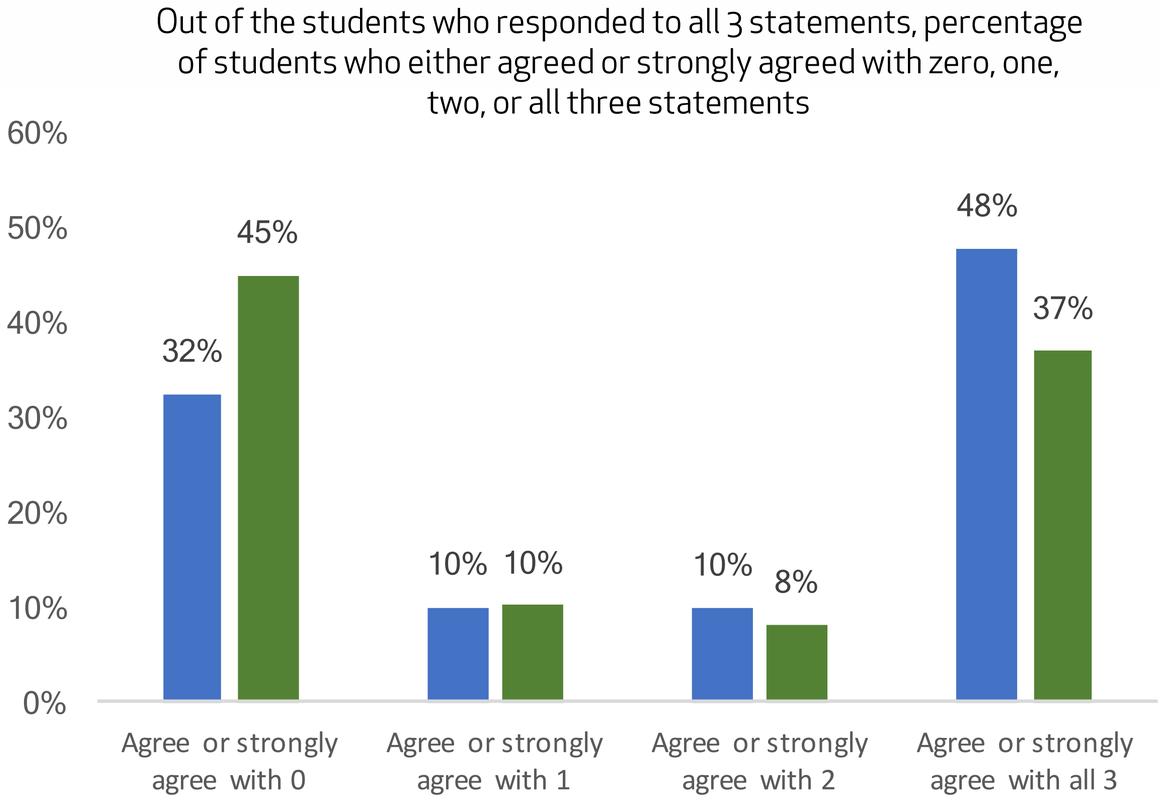
Student Survey



Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey



Belonging in field:

Use your general impression of [course] to rate the items below

1 (Strongly disagree) to 7 (Strongly agree)

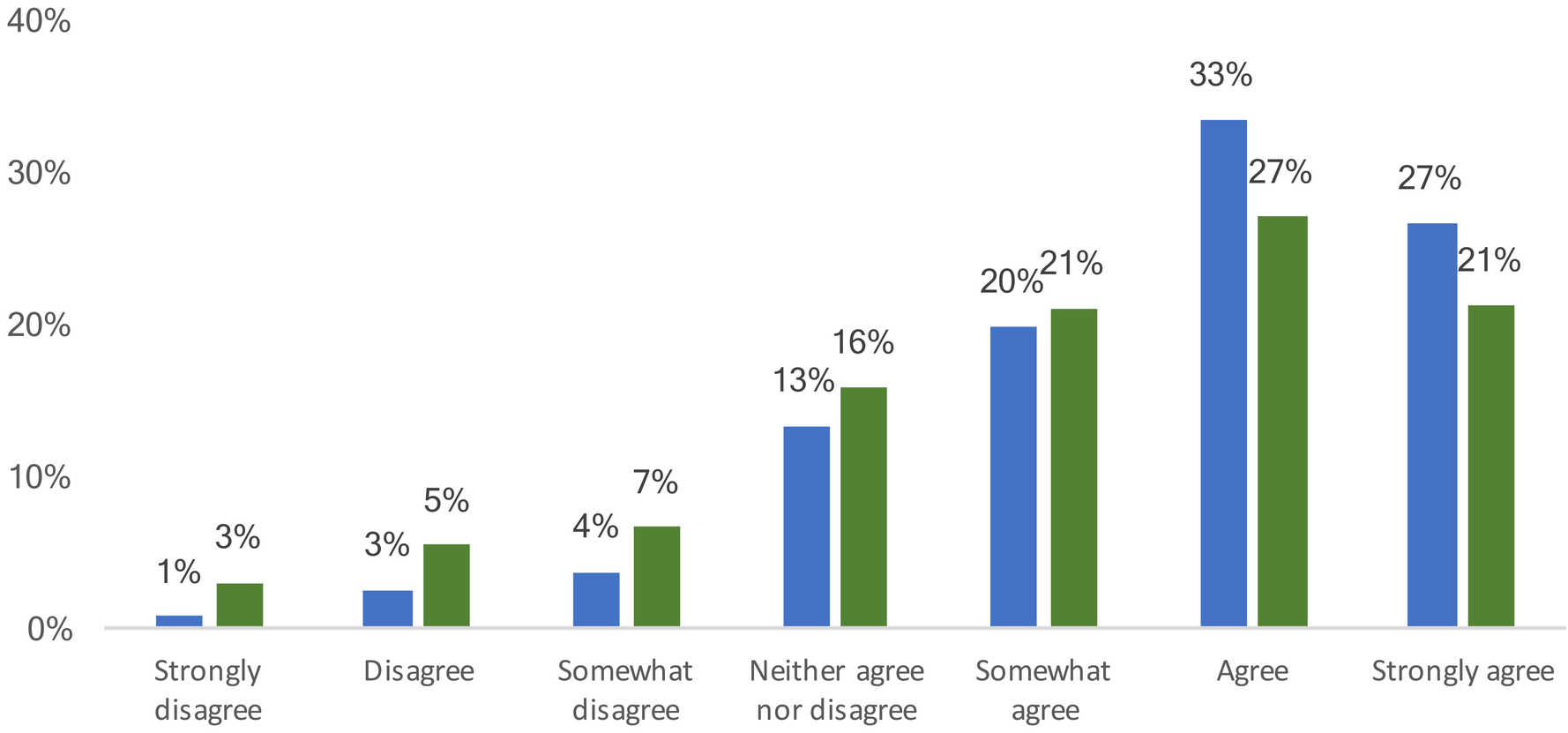
- I see myself as part of the developer community
- I feel that I am a member of the developer community
- I feel a sense of belonging to the developer community

Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey

Use your general impression of [course] to rate the following: **I see myself as part of the developer community**

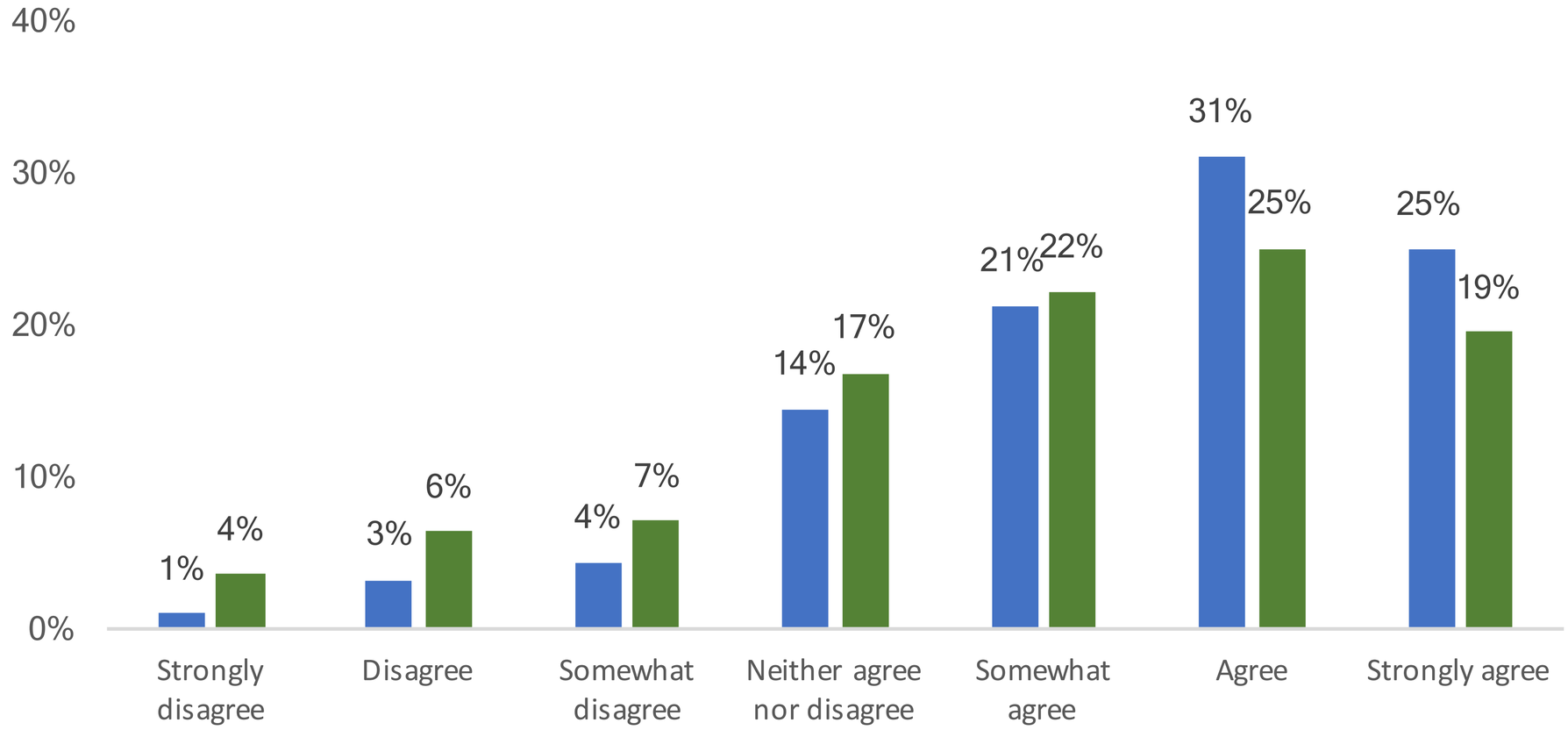


Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey

Use your general impression of [course] to rate the following: **I feel that I am a member of the developer community**

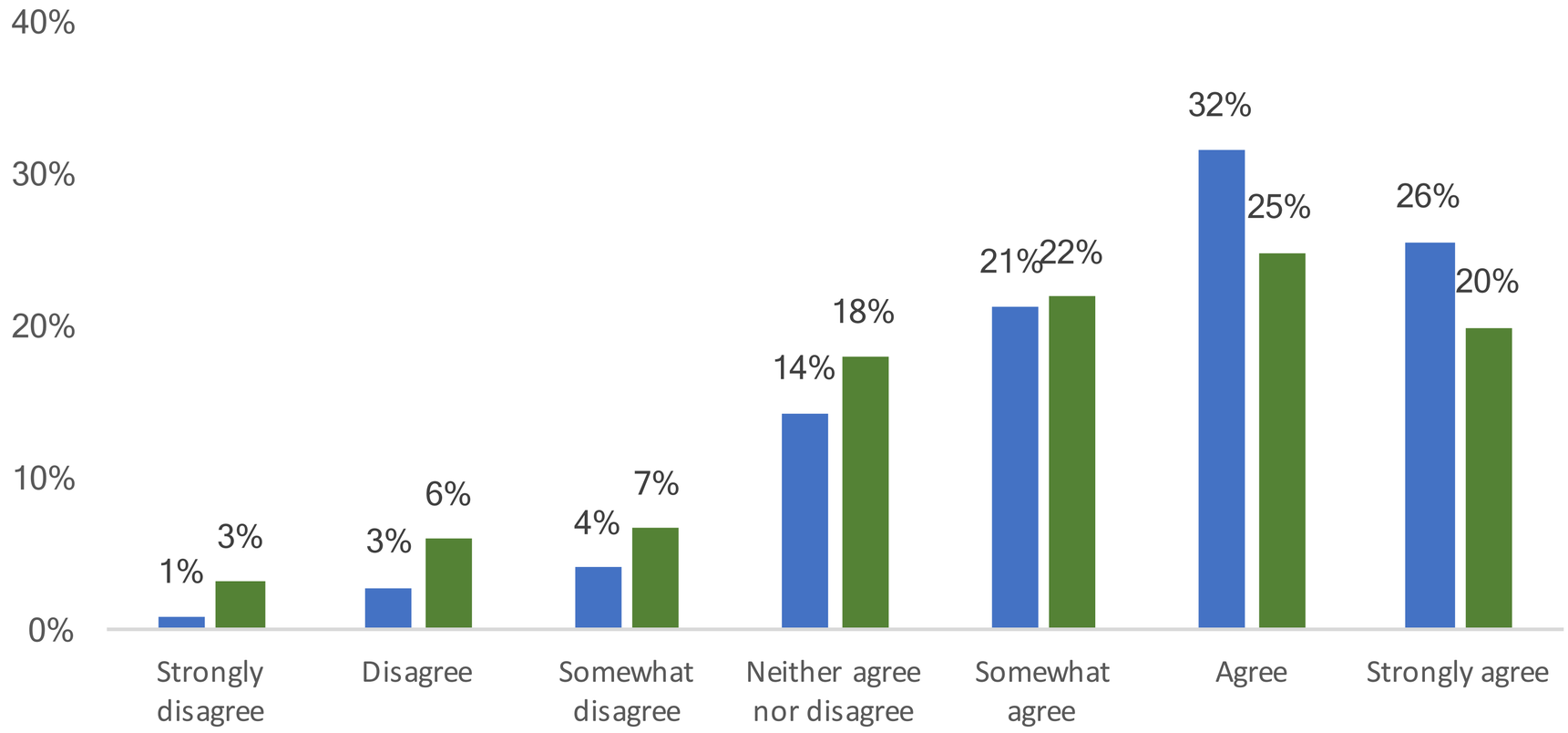


Sense of belonging:

GitHub versus non GitHub classrooms

Student Survey

Use your general impression of [course] to rate the following: **I feel a sense of belonging to the developer community**



Sense of belonging:

Familiarity with GitHub

Student Survey

Feedback

Feedback:

Key takeaways

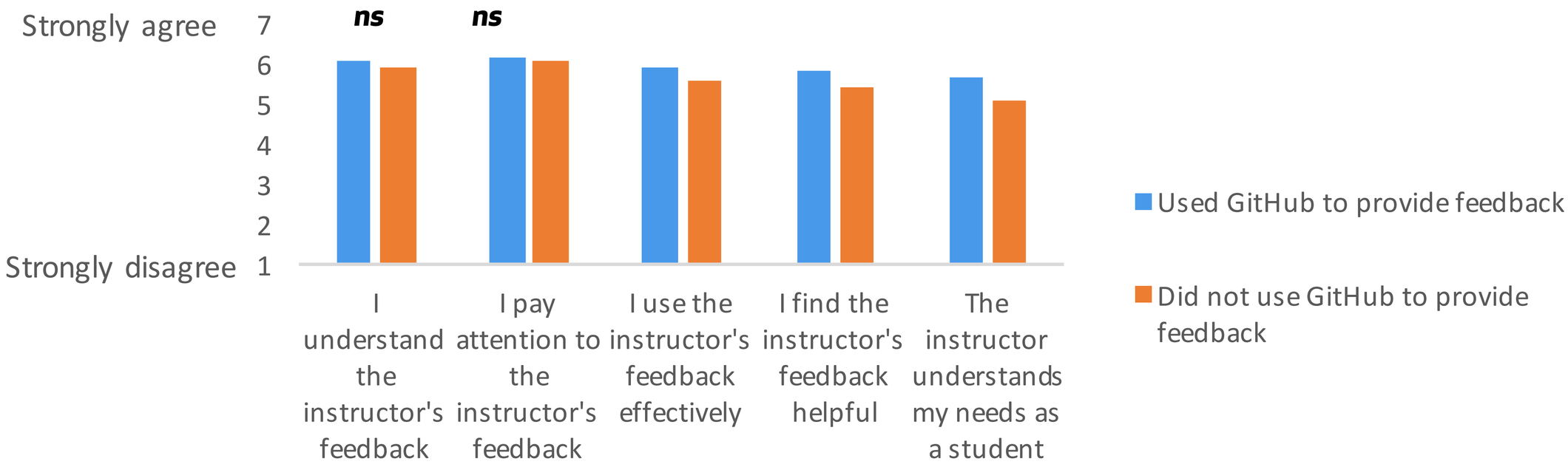
Students who received (versus did not receive) feedback via GitHub benefited slightly more from feedback

- Students felt they used their teachers' feedback more effectively and found their teachers' feedback more helpful.
- Students felt their teachers better understood their needs as a student.
- Students felt they used their peers' feedback more effectively and found their peers' feedback more helpful.

Feedback

Student Survey

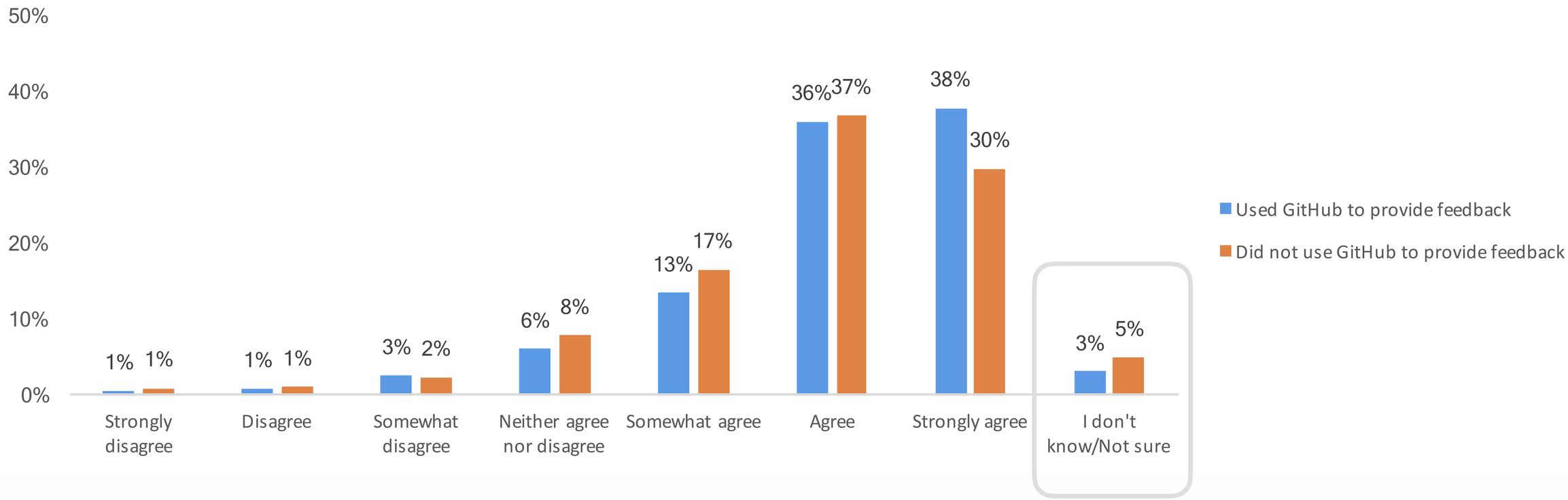
Use your general impression of the instructor's feedback to rate the items below:



Feedback

Student Survey

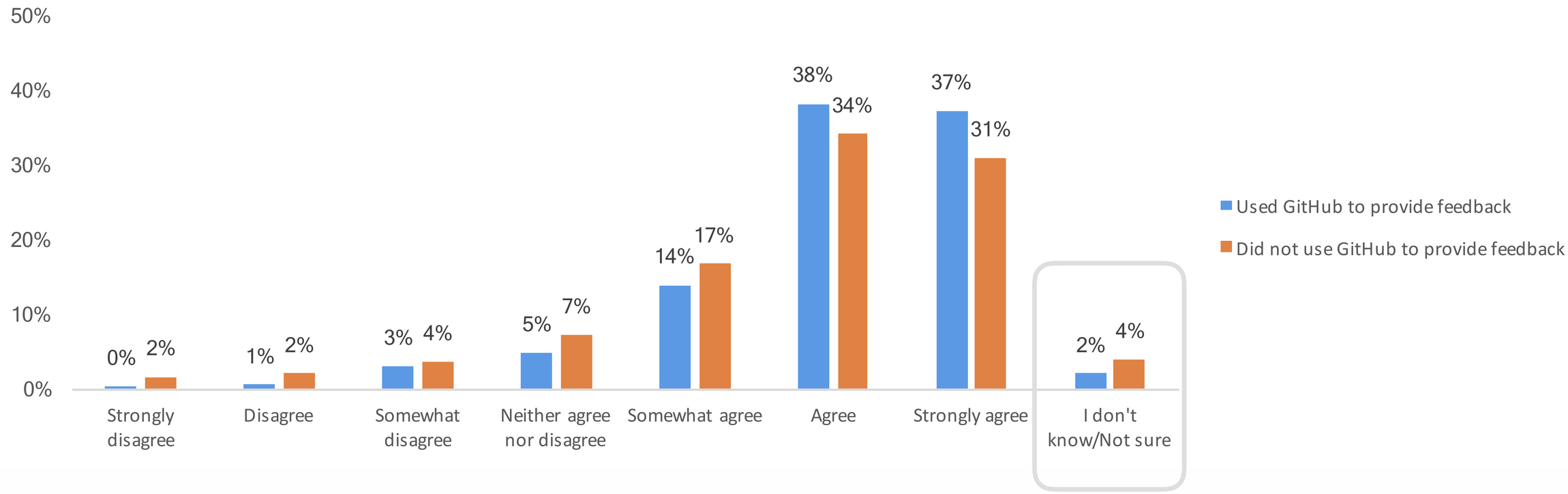
Use your general impression of the instructor's feedback to rate the items below: **I use the instructor's feedback effectively**



Feedback

Student Survey

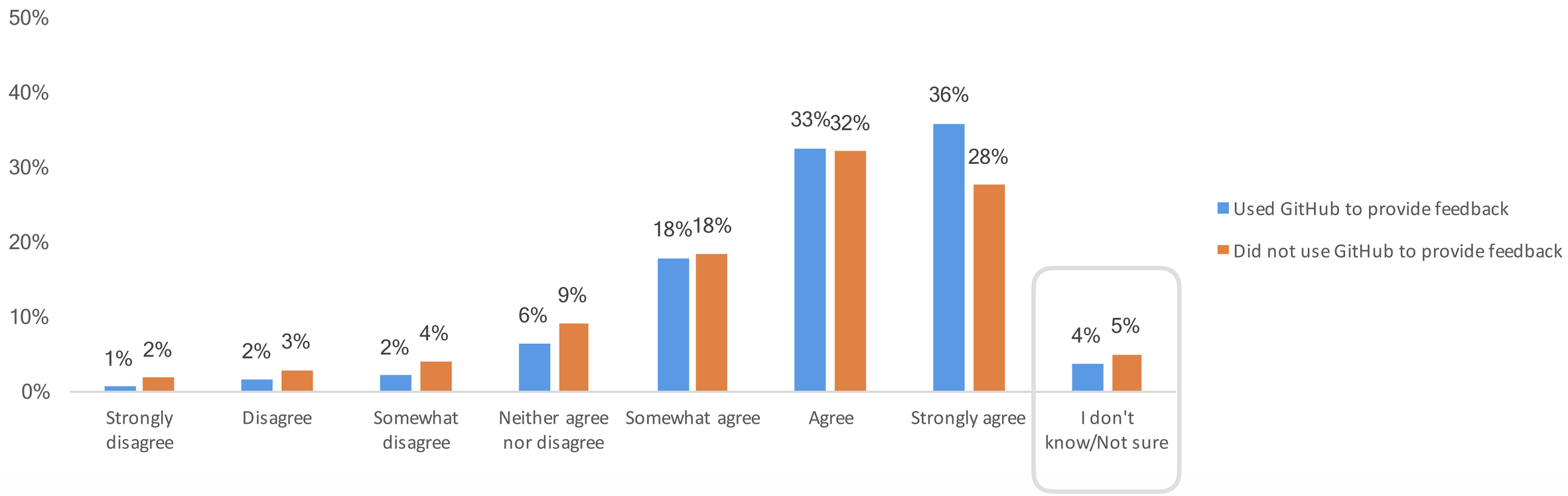
Use your general impression of the instructor's feedback to rate the items below: **I find the instructor's feedback helpful**



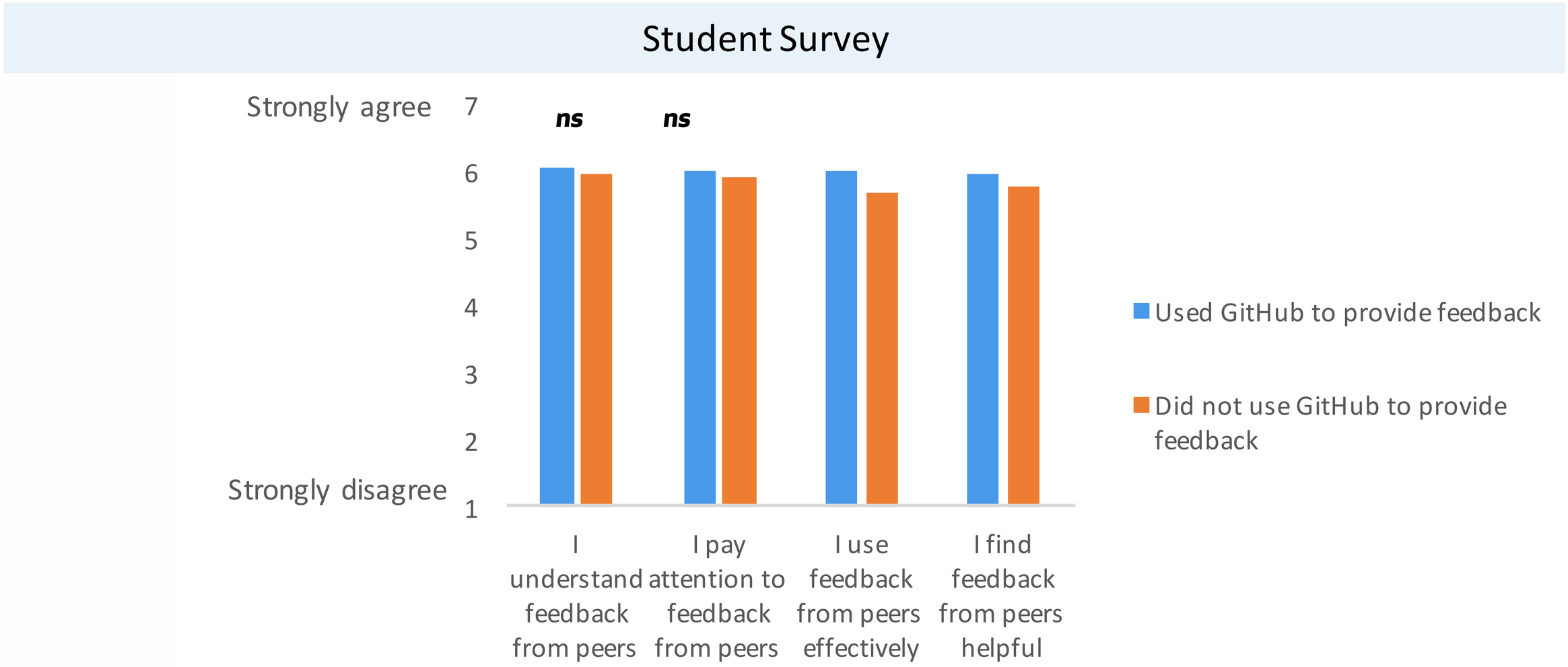
Feedback

Student Survey

Use your general impression of the instructor's feedback to rate the items below: **The instructor understands my needs as a student**



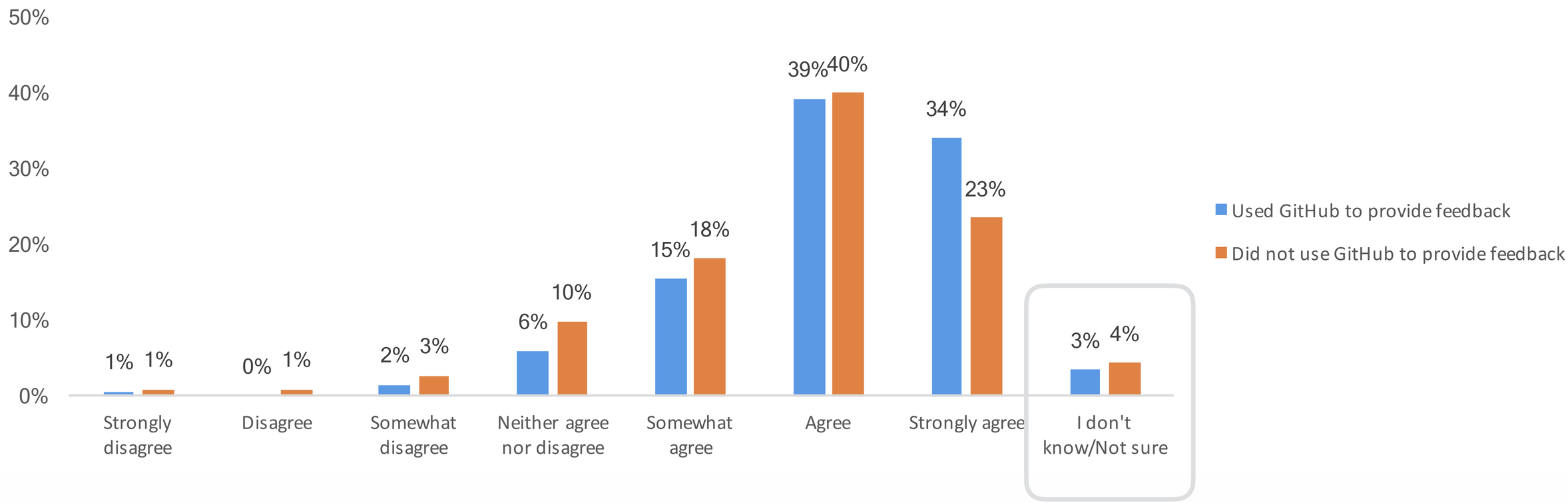
Feedback


Student Survey
Strongly agree
Strongly disagree
7
6
5
4
3
2
1
ns
ns
I understand feedback from peers
I pay attention to feedback from peers
I use feedback from peers effectively
I find feedback from peers helpful
Used GitHub to provide feedback
Did not use GitHub to provide feedback

Feedback

Student Survey

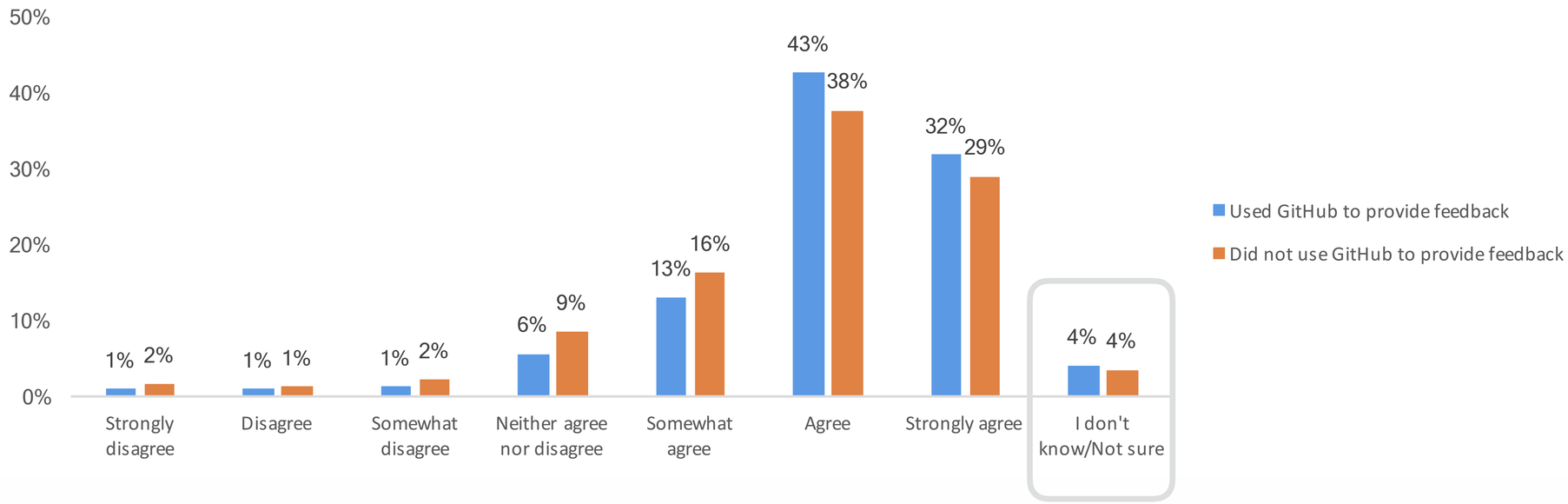
Use your general impression of your peers' feedback to rate the items below: **I use feedback from peers effectively**



Feedback

Student Survey

Use your general impression of your peers' feedback to rate the items below: **I find feedback from peers helpful**



Learning GitHub

Learning GitHub:

Key takeaways

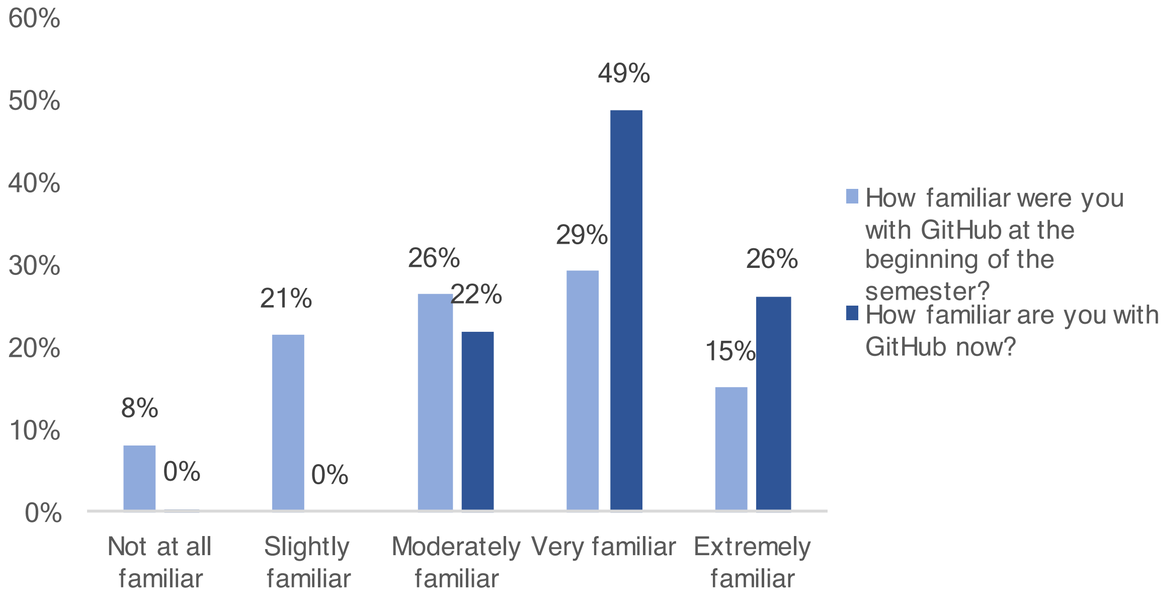
Students need more support from teachers and peers when learning to use GitHub.

- About a quarter of students felt they received less support than they needed from teachers, and about a third of students felt they received less support than they needed from peers.
- Because student respondents felt they were generally more familiar with GitHub than their peers at the beginning of the semester, it is likely that the average student felt they received even less support than student respondents.

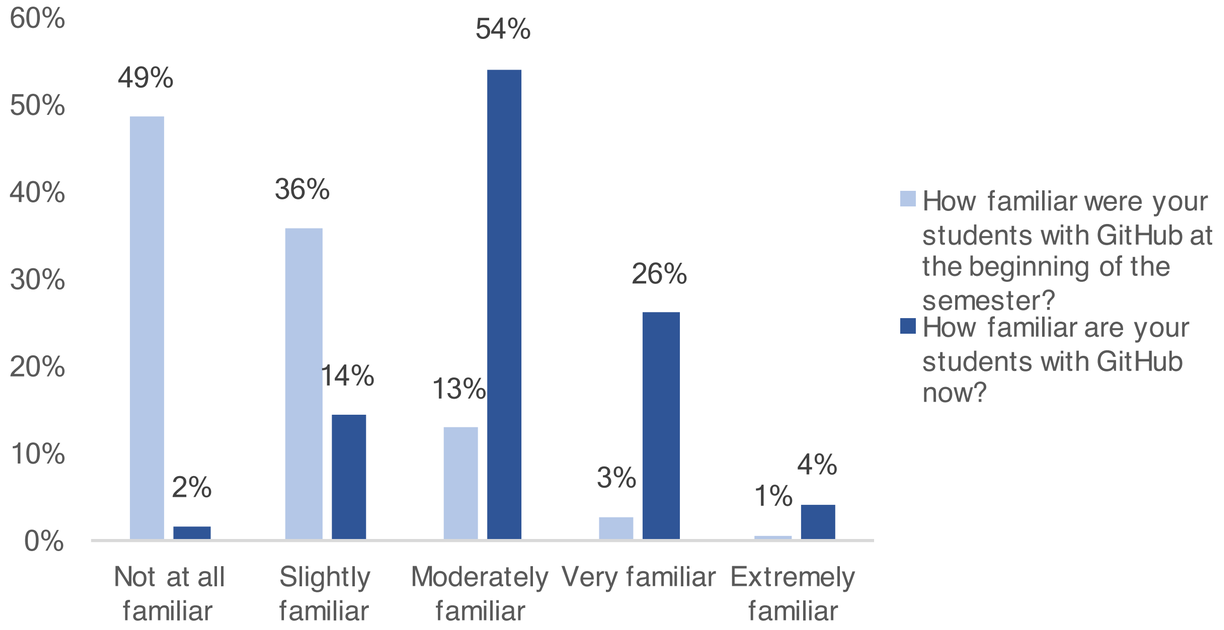
- First-time users, compared to non first-time users, felt learning to use GitHub was slightly more difficult.

Learning GitHub

Student Survey

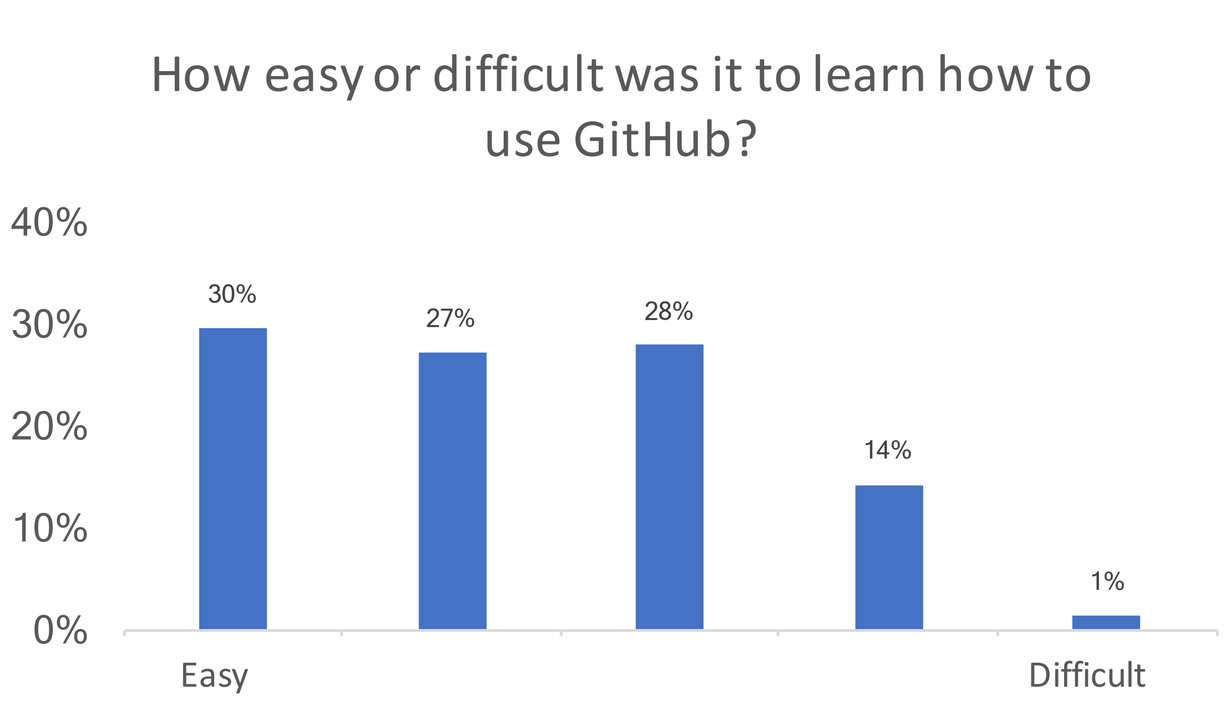


Teacher Survey

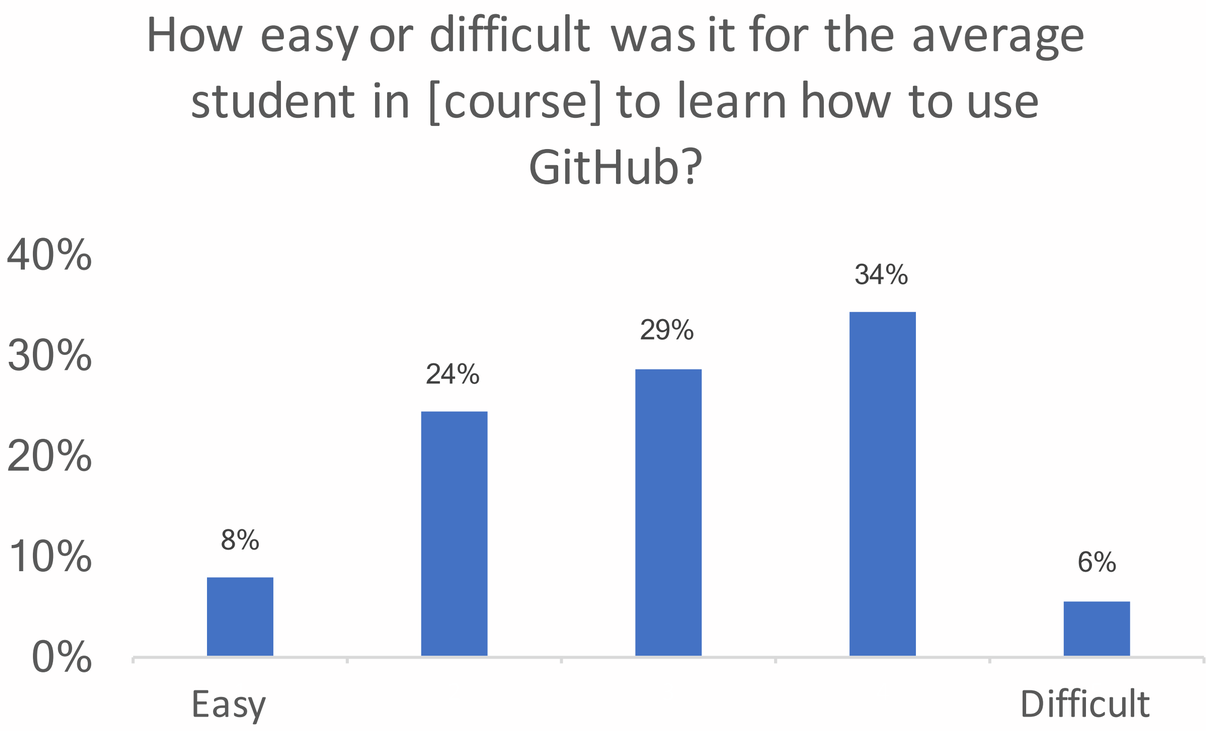


Learning GitHub

Student Survey

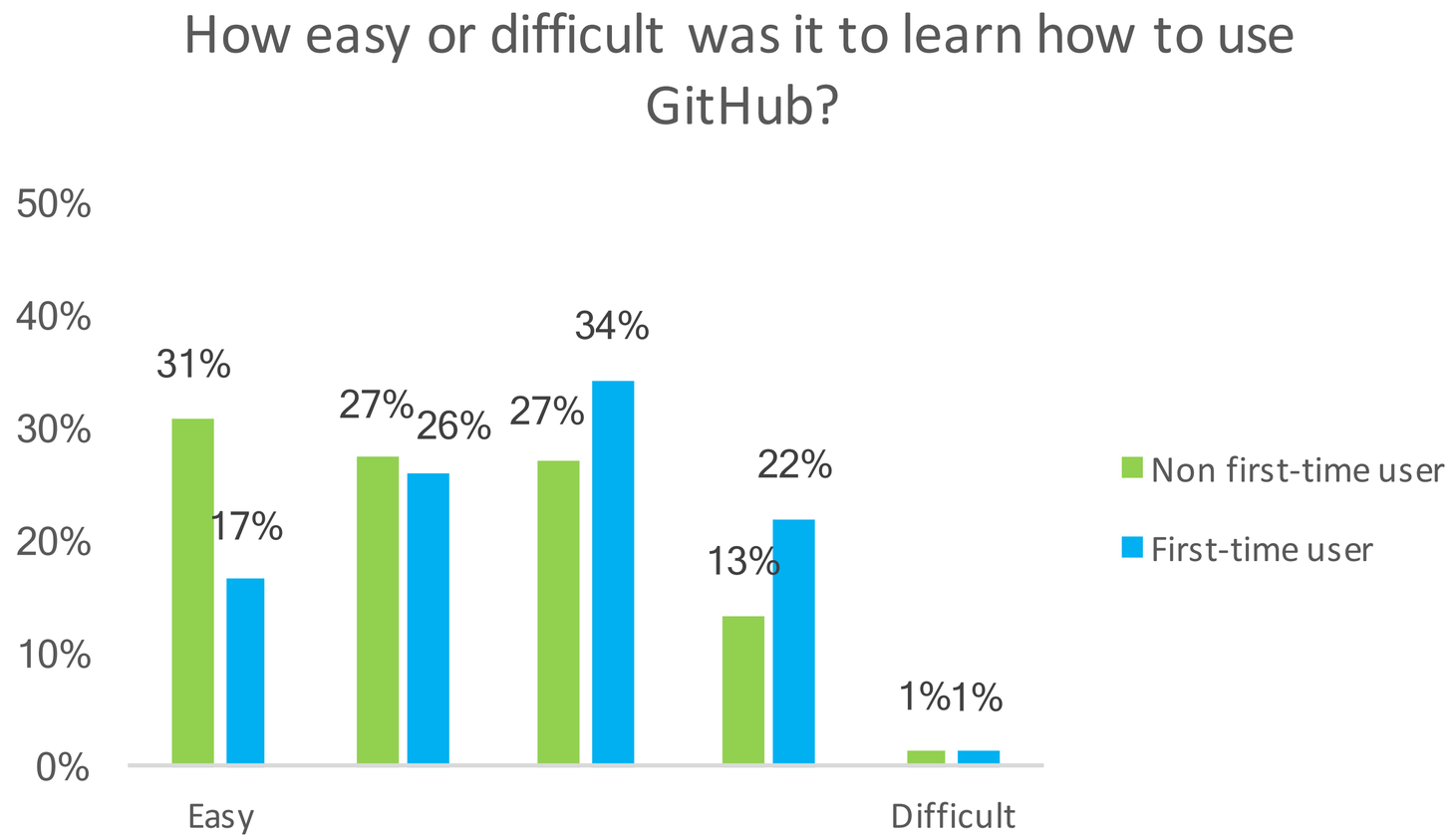


Teacher Survey



Learning GitHub

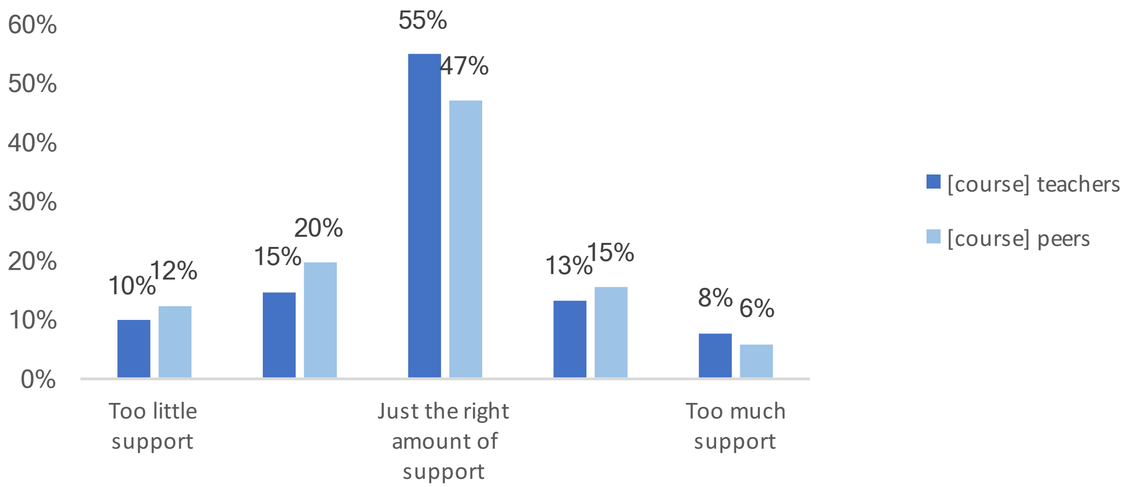
Student Survey



Learning GitHub

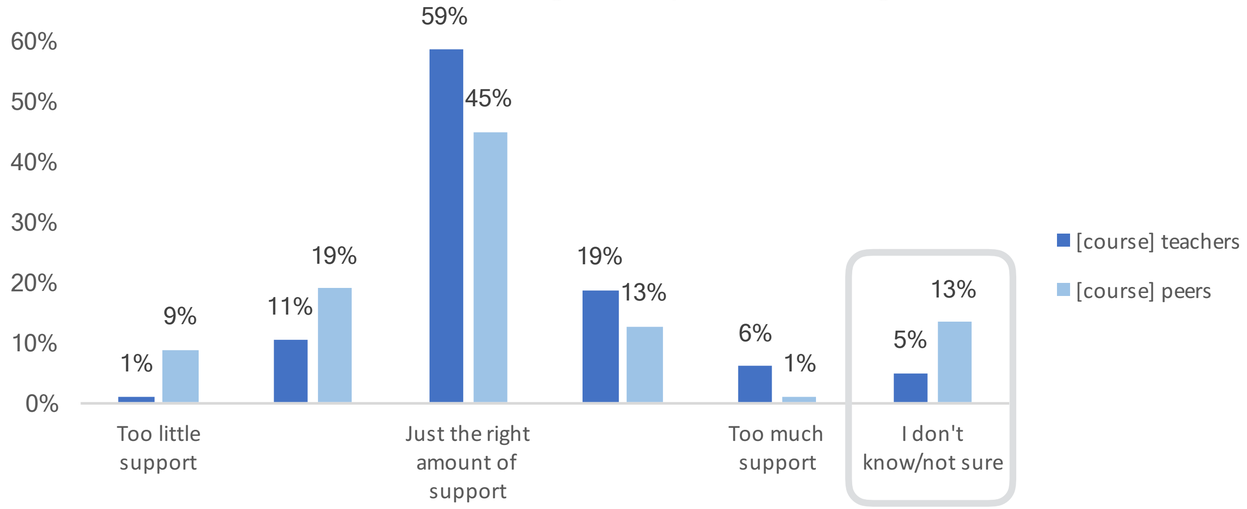
Student Survey

Describe the amount of support you received from each of the following as you were learning GitHub



Teacher Survey

Describe the amount of support students received on average from each of the following as they were learning GitHub



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